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Cretan Palaces and the Aegean Civilization. IV

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CRETAN PALACES AND THE AEGEAN CIVILIZATION. IV.

SINCE the earlier parts of this study were written, various interesting discoveries have been made, not only in Crete, but on the mainland of Greece, such as tend partly to clear up, partly to complicate the problem of Aegean Civilization.

Of the discoveries in Crete the most fruitful in new results are those of Mr. Richard B. Seager relating to the Early Minoan Period, firstly at Vasilikí on the mainland of the Gulf of Mirabello, and later on the islands of Psira and Mochlos off the same coast. As regards the question especially of dominant architectural forms in Early Minoan times, these discoveries, in view of certain theories of development, such as those of Noack put forward of late, have a capital importance.

Following upon the discovery by the Italians of the Early Minoan tholos at Hagia Triada, Dr. Stephanos Xanthoudides, Ephor at Candia, has had the good luck, at Koumása in the Messará to come upon a series of Early Minoan circular chamber tombs alongside of dwellings already of an exclusively rectangular type ; Noack would have done well to take these seriously into account in view of the theories in question.

Those who are interested in the archaeology of prehistoric Crete will now be able to give a warm welcome to Mrs. Boyd Hawes' timely and admirable publication of the results of the American excavations at Gourniá. Some of the American discoveries have an exceptional interest in relation to topics dealt with in the following pages, and this is more particularly the case with the Early Minoan site of Vasilikí and the Palace of Gourniá.

Meanwhile on the Greek mainland, in regions as far apart as Macedonia, Thessaly, and the Peloponnese, discoveries relating to an equally early, if not still earlier, period help to throw a new and surprising light on the problem of the prehistoric civilization which existed on the continental parts of the Greek world. The discoveries by the Germans at Orchomenos are now made available for study, so far as they concern the question of architecture, through the admirable publication by Professor Heinrich Bulle. Certain views of a general character, mistaken as we think, set forward in this work have now received a valuable corrective through the publication by Dr. Tsountas of the results of his important excavations at the sites of Dimini and Sesklo in Thessaly.¹ To pioneer work like this we must further add the results of the explorations at Chaeronea by Dr. Soteriades.² Into the same context comes the lucky discovery of the prehistoric settlement at Zerélia by Messrs. Wace, Droop, and Thompson of the British School at Athens.³ Mr. Wace, who was the first to be attracted towards this site, was also the first to announce the bearing of the early deposits there in their relation to the discoveries of Tsountas and Soteriades.

Parallel with the progress of discovery and the further publication of results has been the advance in the study of these, from the stand-point especially of their more general historical connections.

Much impetus in this direction has been given by the publication of Professor Ronald Burrows' book on 'The Discoveries in Crete' which very succinctly and clearly sums up the historical bearing of the evidence so far as it was available from excavation up to date. Burrows' exposition of this evidence makes all the more convincing the point of view which may be regarded as the stand-point of the excavators gained by gradual experience on the Cretan sites themselves. This is to the effect that Cretan culture is essentially of one piece from its first beginnings to its end in the Late Minoan Period.

Of those who are disposed to deny this unity, first and foremost in the field comes once more Professor Doerpfeld in an article in the *Athenische Mitteilungen*, 1907, 576-603. This in a somewhat modified form is essentially a reaffirmation of Doerpfeld's original contention, that distinct Achaean influence is traceable in certain features in the architecture of the

¹ Αἱ προϊστορικαὶ ἀκροπόλεις Διμηνίου καὶ Σέσκλου.

² Ἐφ. Ἀρχ. 1908, 65 ff.

³ *Ath. Mitt.* xxxii. 289, and *B.S.A.* xiv. pp. 197 ff.

later Cretan palaces. This, be it noted, would not mean merely that by the time of the building of these, Crete already stood under the dominating influence of the culture of Mycenae, but that by the period in question Achaean conquerors from the mainland were already present in the island wielding their hegemony at Knossos and at Phaestos in the arts of peace as well as of war.

The present writer has been so severely dealt with in Doerpfeld's paper referred to, that he is bound to regard it as a piece of singular good fortune that it is not needful for him to take up the cudgels again in his own defence. As good luck would have it Noack now comes forward as champion, so to say, of the cause of Cretan unity. And the new statement of his views is all, we are glad to see, a complete vindication of what may be called the English point of view as to the essential continuity of Cretan culture and of Cretan architectural development down to the end of the Second Late Minoan Period.¹

All the more is it to be regretted that so valiant a champion of the good cause did not content himself with this one achievement and return from his exploit with the sure fruits of victory in his hands. Instead of that, in a too bold spirit of adventure, as the sequel of his book shows, he wanders into other perilous mazes of the Minoan labyrinth with no bright Ariadne there to guide with the golden clue of knowledge.

The Round Hut in the Mediterranean.

One of the problems that have recently engaged the attention of archaeologists is the rôle played by the round hut in relation to rectangular construction in the development of early architecture in the Mediterranean. The scientific data cover a very wide field extending from the Anatolian littoral in the east, as far as to Spain and its further ethnological extension into North-West Europe in the west.

Any scientific investigation of data having so wide a geographical range naturally begins with the formulation of a few main provisional criteria such as might help to connect or separate the phenomena. This has generally been done in one form or another. Thus, for example, the fact has been observed that in the Mediterranean area the rite of inhumation,

¹ *Ovalhaus und Palast in Creta*, 1-35.

which is universal there in the prehistoric age, has brought with it arrangements for the housing of the dead which are a repetition of similar arrangements for the housing of the living. This being so, the next inquiry is: what type of house is dominant in different parts of the Mediterranean archaeological province in question at the earliest period of which we have any positive knowledge?

The answer is clearest for Sardinia. Here the round hut is so exclusively the form of habitation, from a very remote beginning and throughout the Bronze Age, that practically no other type of dwelling comes into account. Now that there is more and more agreement that the Nuraghi are not tombs but strongly fortified habitations and that the round buildings usually grouped about them are village dwellings, the above statement may safely be allowed to stand in its entirety.

A very striking illustration of the phenomena in Sardinia is afforded by the example of the Nuraghe and round hut town of Serucci near Gonnessa in the Iglesiente. This was described by me in a paper read last year at the British School of Archaeology in Rome.¹

In the present connection, what is remarkable about this settlement is that there is not a single rectangular building visible anywhere.

From the point of view of their immediate affinities we may safely say that the round huts of the prehistoric period in Sicily and Italy and the Talayot castles of the Balearic Isles may be regarded as coming into the same context as those of Sardinia.

The Round and the Rectangular Hut in the West Mediterranean.

Here now the curious concomitant phenomenon is observable that while the dwellings of the living are all modelled on the round hut as prototype, the habitations of the dead in Sardinia are almost without exception of rectangular type. The exceptions, however, are to be kept well in view, especially if, as in the present case, they occur early in the series. Thus, for example, the two dolmens of earliest type known to us in Sardinia—those near the station of Birori below Macomer—are both of a rounded elliptical shape. And here it must not be forgotten that at the

¹ This paper has since been published in Italian in *Ausonia*, iii. Fasc. i. 18-48. For Serucci, see pp. 38-45. For a fuller account of the site see now: *Relazione sulla Scoperta di una Stazione Preistorica nel Comune di Gonnessa*, i. Sanfilippo, Iglesias, 1908.

period to which these dolmens belong, the rounded hut must have been already in use. Once, however, the organic process of differentiation had got so far as definitely to fix the types of habitation respectively for the living and the dead, we find that the type of habitation for the dead in Sardinia is as a matter of fact rectangular. This is so, whether we have to do with chamber-tombs cut into the rock, with dolmen-tombs of the advanced type, or with the later transformation of the dolmen in the shape of the so-called *tomba di Gigante* or family tomb of the people of the Nuraghi. The original prototype pre-supposed in the case of the types as already fixed is a rectangular type of dwelling.

This rectangular type of dwelling did not attain to any prominence in Sardinia, because there, under very special circumstances, it came into competition with the round type of hut then undergoing a process of architectural development which culminated in the Nuraghi. In the local struggle for predominance of the two types, the rectangular dwelling was bound to sink rapidly into entire latency in Sardinia, once it became relegated to tomb use as the dwelling of the dead. But we cannot ignore its existence in the immediate environment of Sardinia. Thus, for example, in Corsica in one instance known to me, which must be taken to be typical, a village of rectangular dolmen-like dwellings exists alongside of a group of dolmen tombs. The process of elimination here, if there was any, was in the other direction and was very thorough. No round huts, so far as we yet know, have ever been discovered in Corsica, and it is well known that monuments of the Nuraghi type are entirely lacking there. In Pantelleria again the round chambers of the Sesi tombs have coincident with them dwellings of rectangular type at the prehistoric village of Mursia.¹ This is a reversal of the relations that prevail in Sardinia. The round hut is common in south Italy, and there again we have the rectangular dolmen type of tomb represented sporadically in the Terra d'Otranto. It is the same in Sicily and in Malta.

In Spain in the Bronze Age there is noticeable a tendency towards the predominance of the rectangular type of building for the houses of the living. Thus, for example, the early houses discovered by the brothers Siret at Fuente Verneja were of rectangular type. Coincident with these rectangular houses in south-east Spain we have the round beehive chamber

¹ Orsi, *Pantelleria, Mon. Ant. Linc.* ix. 452 f. and note 1. See also, *The Tombs of the Giants and the Nuraghi of Sardinia in their West European Relations*, Memnon, ii. Fasc. 3.

with dolmen corridor of the Los Millares type. With this alternates all over the Iberian Peninsula, especially in the Portuguese west, the rectangular dolmen type of tomb.

The distribution of both types of construction in France fits on in sequence to that of Spain and Portugal. On the continent of West Europe the tendency in course of time is to leave the round type of building behind altogether as habitation of the living. Yet it accompanies the traditional dolmen as an alternative type of sepulchre and house as far afield as Ireland and Scotland.

The Dolmenic Hut and the Central-Hearth House of West Europe.

The non-occurrence, so far as we yet know, of the round hut in Corsica, while with its next door neighbours of Sardinia this type of dwelling is universal, would seem at first sight a singular phenomenon. Yet it is very characteristic of the way in which architectural development tends to differentiate locally in island communities like those of the Mediterranean. The presence in Corsica, referred to already, of a dolmen type of rectangular house with base course of orthostatic slabs, alongside of the rectangular type of dolmen-tomb, has an architectural significance of its own. If further confirmed by excavation it would dispose at once of a theory set forth by Pfuhl to the effect that the dolmen type of sepulchre is no imitation of a corresponding type of house, but only an independent class of tomb by itself.¹

In this connection the wide distribution of the dolmenic type of tomb all over France acquires a new significance. The earliest rectangular type of house must have penetrated into West Europe at the same time. There is moreover hardly any doubt that the type of rectangular house, which later attained to such ascendancy in France, has to be connected in its origins with the primitive dolmenic type of hut of which we speak. The later Frankish house of historical times, with many intervening phases of development, is the lineal descendant in its general plan of this primitive dolmenic type of hut. The isolation of the living room, with its central hearth, is a primitive feature which has become overlaid through collusion with other types of a later time. But the central hearth which is so

¹ *Zur Geschichte des Kurvenbaues, Ath. Mitt.* 1905, 335.

conservative of the primitive plan is still there, and both are discernible as characteristic features of the Frankish house of the present day.

Towards the north of France there begins to be perceptible a dividing of the migratory ways, which is itself symptomatic of the direction in which the racial movement took place. Accordingly we find that the dolmenic dwelling apparently penetrated into the British Isles in company with the dolmen type of tomb. And here the tradition of the living room with central hearth is only now on the point of dying out entirely. It still survives sporadically in remote parts of Scotland, notably in the Orkney and Shetland Isles.

In company again with the original of the *Hünenbed* type of tomb it skirts the shores of the German Ocean and making a bridge of Denmark crosses the Danish Sound into Scandinavia. There a very early type of dwelling with central hearth and isolated living room has survived, in the shape of the Nordic house, until the present day.

In this general connection it is interesting to note that in the Mediterranean itself the islands of Sardinia and Corsica have still surviving, as the normal type in the villages, a plan of living room with central hearth which must be regarded as having more or less of affinity with that of the continental Frankish house and the Nordic house of Scandinavia. In Corsica the isolation of the living room, which tended to survive in virtue of the presence of the central hearth, was probably already a feature of the dolmenic hut of the prehistoric age. This type apparently did not become universal over the West Mediterranean until after it had managed to oust the round hut dwelling. This was only after the civilization represented by the Nuraghi of Sardinia and the Talayots of the Balearic Isles had come to an end.

*The Isolation of the Central-Hearth Room in the West Mediterranean
and in West Europe.*

Here it must not be forgotten that the central hearth and the tendency to keep up the isolation of the living room were to all accounts as characteristic a feature of the round Nuraghe hut as they were of the rectangular dolmenic dwellings of Corsica. The difference between round and square in construction is here of no essential account. What is essential is the circumstance that the isolation of the living room is the

prime fact with which we start in conditions of life so primitive that the one living room is the only one that exists in the case of the primordial hut-dwelling, whether round or square.

The next stage in development is the simple addition of hut to hut. Each of these is accessible by its own door. It is thus only on second thoughts that internal doorways are opened up for direct communication between one room and another. What now is essential in the case of a complex system like this with through doors, is to have the doors (and windows if there be any) in such positions that the fire be not affected by passing air currents. Accordingly we find as a matter of fact that the tendency to protect the central hearth from air currents is found to be universal all over those regions of the Mediterranean and Europe where this type of house exists.

In the Mediterranean, with its mild climate, we find that the isolation of the central-hearth room is not nearly so rigidly carried out as on the continent of Europe, where the climate is more severe. This is natural. In Corsica and Sardinia, for example, the household fire is not a permanent institution in the warmer summer months. Accordingly, when the fire is out, any through doors and windows there are are thrown freely open. If we take the other extreme of Norway, where the central household fire of the Nordic house is permanent throughout the greater part of the year, we find that the isolation of the living room is correspondingly permanent, and the existence of through doors and windows to be thrown open correspondingly lacking.

We see then that these phenomena occur over a wide range in Europe : whether ethnological connection between them can be proved or not, this fact in itself should inspire caution when we are studying the development of such a type of house. This development will never be understood unless we see that it is the more or less permanent rôle played by the central hearth in such a type of house under varying climatic conditions, that itself determines the more or less complete isolation of that particular room of the house of which it is the distinguishing feature.

The isolation in the case of a rectangular or round type of hut dwelling of only one room, like the simplest types of the early Mediterranean, is the primitive fact with which we start. If in such circumstances there is a central hearth the isolation is apt to be maintained even after the dwelling has come to consist of several rooms. If on the other hand there is no

central-hearth room, the conditions that give rise to the isolation are lacking, and accordingly we find that under such circumstances the isolation does not occur. Thus then, as a process of architectural development, it is not a case of closing doors that were already there, but at the most of establishing communication with the living room (in regions where the living room has a central hearth) in such a way as still to give the necessary protection from air currents. We thus find as a matter of fact, that in all regions of the Mediterranean and the continent of Europe as far afield as Scandinavia, where the central-hearth house exists, the universal tendency is to protect the central hearth from such air currents. So general, indeed, is the tendency that this is invariably done even if the exigencies of space and the architectural distribution of the parts of the house as a whole, make it needful to shift the hearth from its central position to an eccentric one.

There are, however, circumstances of a climatic character, such as we may easily suppose for the more southern part of the Mediterranean, which are favourable to the development of a type of house with connected rooms, in which the central hearth arrangement need not be supposed to play a part. Let us now suppose the migration northwards of such a type of *b'ut* and *b'en* house to a ruder climate requiring a fixed central hearth instead of the occasional fire around which people warm themselves on cold nights. There is in such a case no doubt whatever that the existence of air currents such as would blow the smoke about, would naturally lead to the keeping closed of doors that were already there. Not only so, but under such circumstances, experience would gradually lead to the omission of doors that were previously a convenience, simply because under the new climatic conditions supposed, which required the permanent central hearth, they are now found to be an inconvenience.

The uniformity of architectural context which we find prevailing over areas so far apart as the West Mediterranean and North West Europe in the prehistoric era is itself a singular phenomenon. By the beginning of the Bronze Age the valley of the Rhone must have played a dominant rôle of communication between the great world of the Mediterranean and the North; by that time it was probably already the high continental trade route towards the tin mines of Britain. What the establishment of such a trade route between the Mediterranean and West Europe was calculated to bring about was the encouragement of certain uniformities in

architectural construction which were no longer of a strictly local character. Local characteristics having ethnological connections of a more intimate nature would thus tend to become overlain with others which had a more general relation to the universal conditions of culture in the Bronze Age over the Mediterranean as a whole. The gradual conquest of West Europe by the rectangular types of house to which we have already referred may have received a powerful impetus in this way. But in any case this was not an impetus that could have affected the development of the type in Norway in any intrinsic way, since here we are out of touch with the trade route in question. And indeed as a matter of fact we find that the type as it now exists is freer from collusion in Scandinavia, in the shape of the Nordic house, than in any other part of West Europe.

The establishment of the great West European trade route was not itself responsible for the presence of the dolmenic type of house and tomb, even along its own track in France. That trade route rather presupposes in turn prior migratory movements from the Mediterranean with which the penetration into the north of the dolmenic type of house and tomb are to be directly connected.

The conditions that really paved the way for the early habitation of West Europe as compared with the East were, to begin with, of a peculiar climatic character. The calorific influence of the Gulf Stream, after the last Ice Age, had brought about a relative mildening of climate on the littoral regions of West Europe, which brought it into marked contrast with the severe climatic conditions that still prevailed in the interior and East of the Continent. It was this mildening of climate in the littoral regions which stood under the influence of the Gulf Stream that was itself the prior condition in favour of those migratory movements northwards in West Europe as far as Norway of which we speak. The first wave of these migratory movements northwards—that which originated the primitive littoral civilization represented by the *kjökkenmødding* deposits—was at a time so early that there is no phenomenon corresponding to it in those regions of interior and East Europe not affected by the calorific influence of the Gulf Stream. Thus it is again that the corresponding migratory movements northwards in the Middle and East Mediterranean were much more tardative in their penetration into interior Europe. Indications of such migration are present, it is true, about the littoral regions of the Adriatic, the Black Sea, and in the lower valley of the Danube, but they

never reached a latitude in interior Europe so far north as Scandinavia in the west. Much less then were there racial movements one way or the other of such a thorough character as would account for the extraordinary resemblance between the plan preserved to us in the Nordic house and the central-hearth megaron of the Balkan Peninsula.

The Nordic House and the Central-Hearth House of the Balkan Peninsula both cognate Mediterranean Types, but the one not derivative from the other.

The realization again of the great amber trade route between the Levant and the North must have followed very gradually in the wake of the tardative habitation of interior Europe of which we have just spoken. Thorough communication with the north must thus have been considerably slower across the continent than was the case with the great West European trade route to Britain. If then, as we found, the one could have had no real influence whatever on the development of house forms so far afield as Scandinavia, since the western trade route stopped short at Britain, neither could the other trade route have brought those house forms right across the whole continent of interior Europe. The amber trade route stopped short at the Baltic if indeed it ever went so far and did not as some think stop short at the amber deposits connected with the estuary of the Dnieper. In that case it still less touched Scandinavia than the tin trade route between Marseilles and Britain.

It is indeed the very freedom from such collusion of the Nordic house that is itself probably responsible for the close resemblance of its plan to that of the equally pure central-hearth megaron type of the Balkan Peninsula. Both types start their existence with more or less close affinities in the Mediterranean itself, but once their paths divide on the continent of Europe they never have any further connection with each other. The dolmenic plan of the Nordic house had already reached Scandinavia by way of West Europe before the central-hearth megaron had managed to penetrate the Balkans.

This penetration into Europe was itself prior to the establishment of even the earliest trade routes, whether in the east or in the west. The an achronism involved in the theory that it depended upon the establishment of trade routes is equally apparent in either case. But it would be a still more serious anachronism which would account for the resemblance between the central-hearth hall of the Balkan Peninsula and the Nordic

house by supposing that the type had wandered northwards as a result of trade relations between the Hellenic world and North-West Europe in historic times.

This is the theory proposed by Meitzen.¹ The general tendency of Meitzen's investigations is, however, more in accordance with the view that it was by way of West Europe that the prototype of the Nordic house reached Scandinavia. Thus the theory in question is not one to which its author would on consideration be prepared to attach any other importance than that of an alternative suggestion.

The theory, however, becomes mischievous when it is used to support views which were the contrary of those held by its author. This is what Noack does. Acting on this hint of connection between the Nordic house and the central-hearth hall of the Balkan Peninsula, Noack now suggests that the penetration took place the other way, and at an earlier period than that suggested by Meitzen. This would then be from some centre of interior Europe, preferably Aryan, which would thus be responsible equally for the Nordic house and the central-hearth megaron of the Balkan Peninsula.² To this we shall return.

The eastern and the western migratory movements northwards were effectively divided by the great ice barriers of the Alps, and, once the roads divide, there never was any such meeting of the migratory paths again as could have brought the Nordic type of house into any touch, direct or indirect, with the central-hearth megaron of the Balkan Peninsula.

The penetration into Europe of the cultivation of the soil went by the same highways from south to north as the migrations of the Mediterranean peoples, and this penetration stood in direct relation to the same climatic conditions. The mildening climatic influence of the Gulf Stream made this penetration much more rapid in the west of Europe than in the east. Our most time-honoured cereals are of South European, Africo-Mediterranean derivation. The same phenomenon is observable as regards the origin of many of our cultivated trees that in the course of the ages have taken on an entirely North European guise. Here again there is much more unity observable in the phenomena in West Europe than in the east.

It is the same with the penetration into Europe of stable household arrangements. This went by the same tracks as the cultivation of the

¹ *Wanderungen*, pt. 1, *Ab Siedelung und Agrarwesen*, iii. 503-5.

² *Homerische Paläste*, 35-6.

soil. Before this process of settlement could be accomplished, nomadic conditions of existence, like those that prevail on the steppes of Asia and in the deserts of Africa, had to come to an end. The occasional cause of this in Africa was the gradual enlargement of the desert area through climatic desiccation. The natural result was a continuous retreat northwards of the North African nomadic tribes towards the south shores of the Mediterranean. The greatest possible check to the survival of nomadic conditions of existence is presented by the barrier of the sea. And this is more especially true of people migrating in the direction of the sea and settling on its shores. Under such circumstances the first development of the need for fixed habitation on a great scale is apt to be on these shores themselves and in the fertile regions inland from them. Thus it is that our earliest European architecture in the Mediterranean, and the regions most intimately connected with that in the northward direction, is found to have the closest affinity with cognate phenomena of a more primitive architectural character on the African shores of the Mediterranean.

The Mediterranean unfavourable to the Survival of Nomadic Habits.

The insular condition of existence in the islands of the Mediterranean itself was entirely unfavourable to the survival of nomadic habits. Accordingly we find that nomadic conditions of existence are brought abruptly to an end by the population of the Mediterranean and its littoral, at a period so early as to precede by thousands of years the entire cessation of the same habits in the more continental parts of East and Central Europe, to which there was free access by land for nomadic migration from Asia.

The Survival of Nomadic Habits in East and East-Central Europe.

The contrast between ethnological conditions in the Mediterranean and in East-Central Europe in this respect is of much greater significance from our point of view than might at first sight appear.

Thus to take the most recent example of the survival of nomadism in interior Europe. The Magyars, with villages that still wear a nomadic aspect, hardly got finally settled into political unity in the valley of the Danube much more than a thousand years ago. Thus they had to pass at

one stroke from the nomadic portable huts of their Asiatic steppeland to the Gothic and Renaissance architecture of Mediaeval and Modern Europe. There is accordingly no more glaring architectural contrast to be seen in Europe than that between the nomadic-looking Hungarian villages of our day and the splendid city of Budapesth with its Burg and Gothic Cathedral at Ofen.

It might seem going rather far afield to draw attention to this recent example of the survival of nomadism in interior Europe, were it not symptomatic of migratory conditions that held true of the same region of Europe at a still earlier time. And they held true in an analogous sense because the ethnological outlook from Asia towards the West was the same in earlier ages as at the much later time of which we speak.

The Round Wooden Hut of Nomadic Asiatic Origin in the Danube Valley.

Thus it cannot now seem by any means accidental that the columns of Trajan and of Marcus Aurelius in Rome should both reflect in the contrasts of their architectural representations the same meeting of opposing ethnological currents in the valley of the Danube that characterizes the Hungary of a later time. The round and sometimes square wattled huts of Marcomanns and Dacians that appear in these representations have the same relation, more strongly marked, towards a previous nomadic life in portable huts in the steppes of interior Asia as is betrayed by the external aspect and internal arrangements of the later Magyar villages. The peoples who were responsible for the presence in East and East-Central Europe of the round and rectangular wooden huts that appear on the columns of Trajan and Marcus Aurelius had probably entered the Danube valley some three thousand years before. And there is no doubt whatever that the peculiarities in construction that are typical in these huts are to be traced back to a previous nomadic existence on the steppes of Asia. Yet here we find them still surviving and being kept up as late as the second century A.D.

*The Round Wooden Hut of the Danube Valley unconnected with
the Mediterranean.*

The contrast in this respect between the conditions of architectural development in the Mediterranean and in the Danube valley respectively presents an interesting spectacle. Thus, if we take the round hut which is of a particular bearing here, we find that in the Danube valley this is still of wood and still bears traces of its nomadic origin in interior Asia at a time when the great beehive tombs of Mycenae and the massive round stone houses of Sardinia and other islands of the Mediterranean, were already the legendary marvel of a long forgotten past.

This contrast cannot be explained by any theories of unity in origin such as would trace back the circular stone hut of the Mediterranean to the round wooden hut of East and East-Central Europe, which has to be taken as the remote prototype of those portrayed with such unmistakable realism on the column of Marcus Aurelius.

The real significance of the contrast should not escape us here. From what has been said already it can now be seen that this contrast rests upon the antithesis of prior conditions in the Mediterranean and in the Danube valley respectively.

The antithesis consists essentially in this :—

The island communities of the Mediterranean had already left behind them the nomadic conditions of existence in the Neolithic Age. On the other hand the regions of East and East-Central Europe continued, as we have seen, to show traces of their previous nomadic existence in Asia as late as Roman times and even into the Middle Ages. The Mediterranean presented an effective barrier to the penetration from the south of nomadic conditions into Europe and their perpetuation there, from the prehistoric period onwards. On the continental Asiatic side there was no such barrier. The Caspian and the Black Sea can be circumvented either way. Being practically islandless, these seas performed no such rôle as was played by the Mediterranean in virtue of the early establishment of its settled insular communities. Climatically again, owing to their orientation in relation to the migratory movements from interior Asia into East and East-Central Europe, they performed only an insignificant part compared with the dominant rôle played by the Mediterranean in the early civilization of Europe from the south.

We see then that there was no effective hindrance whatever to nomadic migration into Europe from the east. The steppes of Russia itself are more Asiatic than they are European. Thus the perpetuation of nomadic characteristics in the construction of the wooden huts of the Danube valley portrayed on the columns of Trajan and Marcus Aurelius need no longer surprise us. We now know whence they derived those characteristics.

We can thus at length understand that in origin and affinity the wooden huts in question had nothing whatever to do with the round stone-hut architecture of the Mediterranean, to which belong the Talayots of the Balearic Isles, the Nuraghi of Sardinia, the Early Minoan Tholoi of Crete, the Royal Beehive Tombs of Mycenae and, let it here be added, the round huts of Orchomenos.

The Round and the Rectangular Hut in the Aegean.

Having so far cleared the ground let us now return to the Aegean.

Let us start with Crete itself. Here in the Early Minoan Period—the earliest age for which as yet there is much positive evidence—we find that the rectangular type of house is already universal. Yet, as if to give us pause, to the same Early Minoan Period belongs the circular tholos-tomb discovered by the Italians at Hagia Triada near Phaestos.¹ At Koumása again in the Messará Xanthoudides has discovered a series of beehive tombs of the same early period alongside of houses in the corresponding settlement which are entirely of rectangular type.²

Thus then we find that the evidence from the Aegean points the same moral as in the Middle and West Mediterranean. We never anywhere, over a geographical area of any extent, arrive at an isolation of the phenomena such as might enable us to say: here we have rectangular hut and rectangular tomb without any collusion of round hut or round tomb. The phenomena of round and rectangular construction in early architecture, taken in their universal aspects, are already of a mixed character in the Mediterranean at the earliest period to which our knowledge at present extends. We can only say at most that locally, as in Corsica for example, rectangular dolmen-tombs are coincident with rectangular dolmenic huts in the corresponding settlements. Locally again in the Aegean, Melos,

¹ *Mem. r. Ist. Lomb.* vol. xxi. Fasc. v.

² *Παναθήναια*, 103 (Jan. 15, 1905).

Paros, Naxos and other islands give us Early Cycladic houses of rectangular type alongside of cist-tombs which are again rectangular in shape. Yet here once more occasional curving walls afford a hint of survival from a time when round-hut dwellings may have been more common in some parts or other of the Aegean than they can have been in the Early Cycladic Period.

Besides, to give us pause once more, there is the pyxis of Melos, with its round huts arranged along three sides of a square which is itself of rectangular shape (Fig. 1.)¹ This pyxis itself affords the most remarkable instance of the survival, in a very clear and precise form, of the *reminiscence* of a type of house at a period in the Aegean, which, so far as

FIG. 1.—PYXIS FROM MELOS.

we know, furnishes no example of the survival in reality of such a type of house. The pyxis in question, to judge by its analogy with the kernoi of Melos, may be contemporary with the end of the First or the beginnings of the Second City at Phylakopi.² In neither of those settlements, however, have we a single example of a round hut.

On the other hand the arrangement of circular huts round an internal rectangular court, illustrated by the Melian pyxis, is too precise in plan to allow of the possibility that such a type of house was never more than merely sporadic in the Aegean. Here it may perhaps be as well to remember that, underlying the First City at Phylakopi, there is deposit towards the east end of the site which is contemporary with the earliest

¹ After Hall, *The Oldest Civilization of Greece*, Fig. 6. ² *Excavations at Phylakopi*, 252.

cist-tombs in the island as illustrated by the cemetery of Pelos.¹ No houses were found corresponding to the deposit referred to at Phylakopi, and the settlement answering to the necropolis at Pelos still remains undiscovered. Thus, as we do not positively know in these cases that the houses were actually of rectangular type like those of the immediately succeeding era, we cannot quite exclude the possibility that some of them at least may have been round huts like those illustrated by the pyxis.

The Cycladic civilization does not, in the present state of our knowledge, bring us back behind the period of the earliest cist-tombs into direct contact with the still earlier Neolithic period. It is different in Crete. Here that Early Minoan culture which corresponds with the Early Cycladic of Phylakopi has lying behind it the long civilization of the Neolithic age at Knossos, at Phaestos, and elsewhere in the island. At Knossos, however, notwithstanding the vastness of these deposits, pending special investigations for the purpose, we have not as yet the record of a single dwelling or a single burial such as might afford a clue. Yet the actual existence in the Aegean of the circular type of building in the immediately succeeding era of the Early Minoan period, which is attested by the Cretan tholoi, equally with the Melian pyxis, makes the suggestion seem a natural one that the round hut must have been represented in the Neolithic deposits of Crete, and that indeed further, it must have been with the Neolithic people that the round hut started its existence in the Aegean.

The Neolithic Rectangular House at Magasá.

We have seen, however, that in the Early Minoan Period the rectangular type of house is already in general vogue alongside of tombs that are occasionally but not universally built in circular form. Can we then safely assume that the rectangular type of construction was not equally in use in the Neolithic period? We have found elsewhere in the Mediterranean that rectangular and circular types of construction are so apt to turn up side by side in varying relations to each other, that *a priori* we should not expect the phenomena to be different in the Aegean. And here a very interesting discovery has come to warn us not to expect any singularity in the phenomena such as would give Crete and the Aegean

¹ *Ibid.* 239-41.

any place entirely apart from the general context of architectural development in the Mediterranean as a whole. This is the Neolithic house of rectangular type brought to light at Magasá in East Crete by the British School at Athens and shown in Fig. 2¹. As the discoverer says 'it is striking to find a square-built house at this period, when it might have been supposed that nothing more advanced than wattled huts yet existed.'² Considering what was found to be the general character of the Neolithic deposits underneath the floors of the Palace at Knossos this observation is very much to the point. There the lack of stone in the deposits

FIG. 2.—NEOLITHIC HOUSE AT MAGASÁ IN EAST CRETE.

was a singular phenomenon verified in test-pits again and again. Yet it has to be remembered that in the Central Court and West Wing, where our test pits of the time were sunk, the later strata that existed before the first laying out of the building had been in course of time removed; this took place in the process of planing away the top of the hill, preparatory to laying out uniformly level spaces for the ground-floors of the palace. Not only the Early Minoan strata, but the later Neolithic deposits as well, have gradually disappeared all over the area where this process of levelling

¹ After *B.S.A.* xi. 263, Fig. 2.

² R. M. Dawkins, *ibid.* 268.

away took place. Thus it is true that we found no stone walls of any kind, whether curved or straight, in the Neolithic deposits in the West Wing of the Palace at Knossos, but we do not quite certainly know that such walls did not exist in the later deposits which were removed. It may, however, be regarded as symptomatic of peculiar local circumstances, that in other areas, where the Neolithic deposit seemed to us at the time to be complete, the stone constructions were equally lacking. The possibility of such local circumstances ought perhaps to some extent to be taken into account. Knossos is limestone country, rich in stone quarries, both limestone and gypsum, but at the same time remarkably poor in surface stone. The site of the ancient city of Knossos, called Hellenika, is now, it is true, one of the stoniest spots in Crete, but this is due to the artificial accumulation of ages of habitation. We have only to get beyond the limits of the site, in the direction, for example, of the Royal Tomb at Isopata, to realize the contrast in this respect to the natural country around. The absence of stone in the Neolithic deposits may then be due to these local circumstances, especially when referred back to a time long anterior to that exploitation of the limestone and gypsum quarries of the place which later played so important a rôle in the history of Minoan architecture. Notwithstanding this gradually increasing exploitation of the local quarries in a late time, mud bricks were to all appearance plentifully used as building materials throughout the different Minoan periods, going back to Early Minoan times. It is thus more than likely that mud construction played a still more prominent rôle in the hut building of Neolithic Knossos.

As to the shapes of these huts—whether they were round or square—Knossos has as yet afforded no evidence. The Neolithic stone hut at Magasá has thus a special importance. It affords us positive evidence that the rectangular hut in stone was by no means unknown in the Neolithic age of Crete. Considering also the peculiar local circumstances, referred to already, that at Knossos obtained with much probability throughout the greater part of the Neolithic period, there is in itself, surprising as it may appear, nothing whatever to be said against the comparatively early dating in that period, assigned by Mr. Dawkins to the stone house at Magasá.

It is now also possible to view in its probable true light the rectangular Neolithic house in small stones fixed with mud reported by Pernier from

the palace site at Phaestos.¹ If we put this house into the same context as that at Magasá, we shall be able to conclude that in the Neolithic period the rectangular hut had a wide prevalence in Crete, as judged by its occurrence in regions so far apart as Sitia and the Messará.

FIGS. 3-7.

FIG. 3.—PROTOTYPE RECTANGULAR HOUSE.

FIGS. 4, 6, 7.—DEVELOPMENTS OF PROTOTYPE HOUSE.

FIG. 5.—EARLY MINOAN OSSUARY AT KASTRÍ.

The stone-built Neolithic house at Magasá is, however, no longer at the stage in development represented by the primordial hut. It has already two rooms: an outer porch-like room and an inner living room. This inner room probably represents the original hut from which the duplicate system was developed. One sees at once that the outer room

¹ *Mon. Ant.* xii. 22. See also *Excavations at Phylakopi*, 241, note 3, where I suggest a sub- or post-Neolithic date for this house. The reasons I then had for so late a dating appear from the relative text and more fully from what I have said above.

is a simple extension of the other in such a way as to form a separate apartment. The house as it is represents the first simple advance on the prototype from which are derived the rectangular houses of Early Minoan times in Crete.

This prototype itself may be represented by the diagram of Fig. 3. Conceived as an organic unit, it is not possible to start from a more simple type. It has one door, and this is at the end of one of the long sides. Essentially similar is the Early Cycladic hut type of Melos illustrated in *Excavations at Phylakopi*, Figs. 21, 23. At this primordial stage in development, such a unit would be the same, whether the hut had a central fire or not. Variation in the process of differentiation would only begin to make itself felt at the point at which one such unit was added to another to form a complex house of two or more rooms.

The initial phase in the process of addition of unit to unit presents more than one possibility. One such possibility would be that in which each room, regarded still as an isolated unit in the system, was entered by its own outside door, which it already possessed at the hut stage in its existence. In this way, however, instead of a single dwelling, we should have a semi-detached house. The drawbacks of such an arrangement are self-evident. If two units in such a system be set side by side, the partition wall between them, double or single, has to be pierced by means of a communicating door, as soon as the convenience of direct internal communication is realised. This would then lead to the omission of the outside door in the case of the second unit, and so on. The process by which an indirect means of communication was abandoned in favour of a direct one is, it is true, entirely organic, but it no longer represents a really primitive stage in development. One thinks at once of the atrophy of a superfluous member on the creation of one more adapted to the complication of new organic conditions.

There are, however, alternative processes of a more rudimentary and at the same time more natural kind. Instead of the two units being placed side by side, they can be placed one in front of the other as shown in Fig. 4. This is essentially the type of the Neolithic house at Magasá.

The original hut which was the prototype of this house had the door at the end of one of its broad sides. In other words, the hut had a broad front. We now find, however, that the unit added in front was so adjusted to the original unit with which we started, that its door, which is now the

outside door, comes to be placed in the short end which is towards the front. Thus the original room was a broad room, and the new one added in front is a long room. This, however, all happens with a change of orientation or of the front itself. The new front is now at one or other short end of the original hut (in the case conceived in our diagram, at the left-hand end) but under normal conditions, as a result of the addition of unit to unit, it usually turns out once more to be a broad front. The type of Neolithic house represented to us at Magasá must have had a great influence in the succeeding era, for the alternation of broad and long rooms to form new unities is a characteristic of later Cretan architecture which is already apparent in the Early Minoan period.

The Early Minoan rectangular Ossuary at Kastrí.

Once given a type of Neolithic hut, like that presupposed at Magasá, an interesting question arises in its relation to later architectural development: was the type also perpetuated in the burial architecture of a later time?

Here now we come to a second discovery of extraordinary interest made by the British School at Athens.¹ This is the Early Minoan ossuary at Kastrí shown in Fig. 5.¹ Any one can see at a glance that this is once more the plan of the Neolithic house at Magasá in a simplified form. Instead of the porch-like entrance room at Magasá we have in the ossuary at Kastrí a narrower entrance corridor. The original unit here, however, is a long cella. In the process of transformation there is presupposed the same change of orientation in the position of the outer doorway as at Magasá, and this again brings about once more quite organically the characteristic broad front.

Considering the close similarity we have just pointed out, the question in relation to burial rites now comes to be:—In view of the Early Minoan ossuary at Kastrí and its resemblance to the Neolithic house at Magasá, can we argue back to an analogous ritual and an analogous housing of the dead in Neolithic times? At any rate the affinity of the ossuary at Kastrí with the Neolithic house at Magasá opens up the possibility of another interesting vista into the far past which lies behind the Early Minoan Period in Crete.

¹ After *B.S.A.* xi. Fig. 4, item 2.

The Cretan Neolithic Hut, and Minoan Shrines.

A further interesting problem suggests itself here in connection with the Neolithic house-type of Magasá and the ossuary at Kastrí. In the history of early architecture it is well known how the type of the most primitive hut tends to survive in the *templa* of a later time. Now in Crete, such *templa* do not survive as a thing apart giving origin to separate buildings on their own account. Minoan religion, as the results of excavation show, is of an entirely domestic character. At Knossos all shrines are either house-shrines or palace-shrines. The divinities are household and dynastic divinities having an ancestral character and an ancestral reputation to maintain.

At Knossos we found as a matter of fact that there was a tendency for each house to have a room set apart for family worship. Of such shrines the palace was found to have more than one.

These shrines were found to be in a very private part of the house and usually to have no thoroughfare through them. They thus correspond to what at an earlier period would have been the back room in a flight of more apartments than one, and so would represent the original or hut element in the genesis of the house. The isolation and absence of thoroughfare are characteristic of the primeval hut and of all *templa*: they are equally characteristic of the palace shrines at Knossos. The shrine of the Double Axes in the East Wing of the Palace is an isolated room.¹ The same is true of the Shrine of the Sanctuary in the West wing, at least in its later form.²

At Magasá, and again at Kastrí, the doorway is at one end of the wall in which it occurs. This is accordingly a very early feature in Minoan architecture; yet we find it faithfully repeated in the case of the Shrine of the Double Axes. The same disposition of doorways is equally characteristic of the two rooms which form the system of the Temple Repositories.

The corridor by which one approaches the adytum or cella of the shrine of the Double Axes has an orientation in relation to the doorway which is reminiscent of what was found to occur in the case of the ossuary corridor at Kastrí. It is an equally early feature, pointing back to

¹ *B.S.A.* viii. 97, Fig. 55.

² *Ibid.* ix. 37, Fig. 18; 39, Fig. 19; 48, Fig. 25.

primitive arrangements in Neolithic times, of which we have a variant in the house at Magasá. Only at Knossos we have to observe that for the convenience of the palace this corridor has become a thoroughway past the front of the shrine in either direction. With all this, the adytum of the shrine preserves its primitive isolation. There is no thoroughway through that!

There is, however, a still more remarkable example in Minoan times of an adytum-like arrangement with approach but no thorough exit. I refer to the so-called 'baths' which puzzle every visitor to the palaces of Crete. When now we come to examine the plan of these, we find to our surprise that it has a startling resemblance to that of the ossuary at Kastrí. In either case we have a broad front approach by way of a short end corridor into a long cella. The steps down into the 'bath' are customary, but not essential, since they do not occur in the case of the arrangement of this kind in the Queen's Megaron. The entrance is at the end of the respective wall in the case of both doorways. This is a feature we found to be present, not only at Kastrí, but in the arrangement of the Neolithic house at Magasá. There is again the same change of orientation in the approach.

Can we then, in view of features so conservative and so primitive in origin, still continue to call these arrangements 'bath-rooms'? I have already referred to evidence of the domestic character of Minoan worship. The Kings and Queens of Knossos, as Dr. Arthur Evans has well said, were Priest-Kings and Queens. Priestly ritual probably formed an important item in the daily life of these royal personages.

Here now it turns out that one of the arrangements in question, the Balustrade Area of the *Petit Palais* at Knossos was found to yield cult objects which Dr. Arthur Evans rightly connected with a use of the enclosure in the period of reoccupation for religious purposes.¹ Did not these objects, then, represent a rehabilitation of the old cult in the original shrine of the house, as it was in the great days before the reoccupation? This is, indeed, the question Dr. Evans himself asks and in favour of an affirmative conclusion he points out 'that in excavating the space inside the balustrade certain fragmentary relics came to light which might well have belonged to the fittings of an earlier shrine.'

The shrine of the *Petit Palais* is the most elaborate arrangement of

¹ See *B.S.A.* xi. 2-16, Fig. 3.

the kind yet discovered at Knossos, or indeed in Crete. It is passed by a thoroughway corridor for convenience of access from opposite quarters of the building, which reminds one of the similar convenience in the case of the Shrine of the Double Axes in the palace. But the corridor in this new case passes along the side, not in front. The orientation of the entrance door is also an innovation. With all this, however, the shrine itself still preserves the primitive characteristics of the adytum, such as the *templum*-like isolation and the indirectness of access.

These are also just the features which most intimately characterize the type of cella which represents the first stage in advance on the hut-prototype presupposed in the Neolithic house at Magasá and in the Early Minoan ossuary at Kastri.

The impossibility of getting rooms in a simple series out of a house like that at Magasá is something essential to the type which prevented its entering into thoroughgoing inter-connections at a later time. But the alternation of broad and long rooms in pairs, with doorways at right angles, which occurs as an element in Cretan architecture from Early Minoan times onwards, is probably due to the primitive influence of this type of b'ut and b'en house. Taken again itself as a unit, in the simpler form with entrance corridor illustrated by the hut ossuary at Kastri, its tendency to preserve its adytum-like isolation is characteristic. As a Minoan shrine of very early origin it recurs, we have seen, with this characteristic isolation, as an essential element in every Cretan palace.

The b'ut and b'en House in the Aegean.

Let us now return once more to the prototype presupposed in the Neolithic house at Magasá. Another possibility in the manner of addition of unit to unit, one in front of the other, is that which gives the type of house shown in the diagram of Fig. 6. This is no longer a house like that at Magasá. For in the first place there is no change of orientation, and secondly the simple process of addition of unit to unit, as here, tends to transform a broad house into a long one. At Magasá the series stops at two rooms and cannot go further in the same direction as a simple series; here the series can be continued indefinitely in the same direction.

In both these cases the door of the unit in front remains the outside door, while the front wall of the unit behind becomes now a partition wall,

and its (originally outside) door an internal door. But the latter process of integration, so to say, is organically the simpler of the two, since in its addition of unit to unit, if this is continued indefinitely, it achieves *ipso facto* a natural transformation without having to set up internal communication through the piercing of partition walls and the creation of new thorough doorways, and without the changes of orientation and its consequent complications involved in the other case.

This latter process of repeated addition of unit to unit probably began its existence, alongside of the other already referred to, in the Neolithic period in Crete. The type of simple house with two or more rooms, one in front of the other, that emerged, must have been wide-spread in the Aegean, to judge by its occurrence from Early Minoan times onwards in Crete, as at Vasiliki and its appearance in different guises at Phylakopi in Melos.

In Melos, as influenced, however, probably by Crete, it recurs as an essential element in the Pillar House of the Second City at Phylakopi.¹

If now we take our type as a sort of complex unit and simply add it to itself, with an inversion of the positions of the doors in the case of the second or added unit to bring it into more intimate and convenient relation with the first, we have the type shown in Fig. 7.

This type of double b'ut and b'en house with living room in front and bedroom behind may be taken to have been peculiarly adapted for the needs of two closely related families, such as father and son-in-law, living as next door neighbours. In such a house, for convenience of internal communication the partition wall would come to be pierced by means of a common doorway.

In this way we should have a type of house like the characteristic one of the Second City at Phylakopi shown in Fig. 8.² Here, for the sake of greater privacy, the thorough doorway has been opened up at the very end of the partition wall, and the two outside doors remain. At Phylakopi, however, the tendency is more marked than in Crete to shift the door away from the end of its wall.³ The front rooms again are long rooms, and the house as a whole, though double, is a long house.

¹ *Excavations at Phylakopi*, Fig. 26. The building (palace?) belongs to the time of the Cretan hegemony in the Aegean. *Ibid.* 269.

² After *Excavations at Phylakopi*, Fig. 31. Reproduced by kind permission of the Council of the Society for the Promotion of Hellenic Studies.

³ Compare, however, with the Melian house the very similar two-doored *façade* of a Middle Minoan house shown in the porcelain plaque from Knossos, *B.S.A.* viii. 17, Fig. 9, *b*.

The underlying type of house itself (Fig. 6) has a very long history in Crete. All the same, considering its very primitive character, we are not quite prepared for the rôle which the type plays as an element in the architecture of the Cretan palaces themselves. Thus, not to cite minor instances, we are somewhat startled to find that the arrangement of the magazines in the West Wing of the Palace at Knossos goes back to it. We have only to

FIG. 8.—PLAN OF HOUSE OF PERIOD II. AT PHYLAKOPI.

take the unit in the type and repeat it several times, instead of once or twice, to realize that we have all that is essential in the plan of these magazines. We have the same opening off the magazines on one side of the corridor and almost complete continuity of unbroken wall on the other as is already present in embryo in our type. The transformation which took place at Phaestos, through repetition of the system of

magazines on the blank side of the corridor, is the *tour de force* of a later time.

In all this, the feature essentially characteristic of Cretan architecture is the marvellous adaptability with which house types which originally had a distinct existence are made to enter into thoroughgoing relations in a complex system in which all the parts are in organic connection with each other. The isolated cella of the primitive Neolithic hut with broad front and door at the end of its front wall can be repeated in a simple series to form a house of two or more rooms with an identity of its own, and yet we find the same serial character coming out in combinations in which it is no longer a house by itself, but a complex element in a greater whole, as illustrated by the magazines at Knossos. At the same time, alongside of this process, it enters into combinations in which it preserves its separate isolated identity throughout, in the same great whole as in the typical case of the Minoan Shrines.

In all the multifarious variety of later development we commonly find that the prototypes which have the earliest start in existence turn out to have the longest survival in history.

The organic process by which prototypes combine to form new unities in larger systems begins at a very early period in Crete.

Thus, for example, the Early Minoan house at Vasilikí discovered by Mr. R. B. Seager and shown in *Gourniá*, Pl. XII. 19-27, is in its main features essentially of the type illustrated in our diagram Fig. 6. At the same time the house seems to be entered from the side, and this is a feature which is reminiscent of the Neolithic house at Magasá. It has thus a broad front and its rooms are broad rooms.

The doors preserve a very old custom in being at or near the end of the walls to which they belong, and they are preferably at the right end. This disposition of door-ways, at the end of walls instead of at the middle, is a favourite one, and occurs in every period of Minoan architecture down to palace times.

The very marked preference of the door for the right end of the wall is a feature which is very characteristic in the case of isolated houses of small size in the earlier periods. And it is very likely that the preference is the result of some process of selection depending upon the requirements of light and shadow, heat and coolness, in relation to the orientation of houses in a southern climate. It is at any rate noticeable that this

particular distribution of doorways is less uniformly adhered to as circumstances change, and the type of construction with which it is connected enters more and more, as an element, into complex systems like those of the Cretan palaces. But occasional reminiscences of the arrangement never quite die away, and the most remarkable instance of this is that of the magazines at Knossos to which reference has been made already.¹

The Early Minoan house at Vasilikí is, as we have seen, no longer of simple plan. The underlying two-roomed type is represented by the front room 22 and the back room 21. To this is added in front the corridor 27 with its entrance at the left hand end.² This entrance corridor, with the characteristic change of orientation it involves, is a very early feature with which we have had some acquaintance already. At Vasilikí, however, it no longer stops short at the door into the front room. It pierces the wall alongside of this, and turning a right angle outside the wall is carried along outside both rooms to the end behind. Here there is paving, and this makes it possible that our corridor was open to the sky all along, and that it thus performed the same function as the light-wells of later Minoan times. One instinctively thinks of a narrow corridor and light-well arrangement like that flanking on the south side the Queen's Megaron at Knossos.

This type of entrance corridor is very common elsewhere in the Aegean as well as in Crete. In Melos it plays an important rôle in the Second City at Phylakopi. The most interesting example is that of the house shown in *Phylakopi*, Fig. 27. This case is all the more striking as the house in its general arrangement seems to anticipate the plan of the later, Mycenaean, palace at Phylakopi.³

There are equally close analogies on the mainland of Greece itself both at Mycenae and elsewhere further north. Thus, for example, there is the Palace of Arne, for the knowledge of which we owe so much to Dr. Noack. Here there are at least two instances of a b'ut and b'en system with external corridor exhibiting more than an accidental resemblance to

¹ With results that are pitiable, time-honoured tradition that has preserved an analogous eccentric arrangement of doorways in Cretan household architecture to the present day, is only now beginning to give way under the exotic architectural influence of Parisian Athens. Symmetrical façades of portentous loftiness now glare at one in their flaunting paint along the narrow lanes, and the old interior courts with their lovely show of flowers will soon become a thing of the past.

² *Gourniá*, Pl. XII. 19-27.

³ See *ibid.* Fig. 49, and Atkinson on p. 44.

the house at Phylakopi.¹ Noack himself compares with these again a private house to the south-east of the Grave Circle at Mycenae.² The characteristic corridor occurs at Arne as at Phylakopi. The house at Phylakopi is in embryo what the Palace at Arne is twice over and on a large scale.

The central arrangement of the doorways, that is to say, the tendency of these to occur in the middle of the wall to which they belong, is the same at Phylakopi as at Arne. There is also the same elongation of the living room. There is again the same characteristic isolation of this at Phylakopi, at Mycenae, in the case of the north megaron at Arne and, we may add, at Troy II.³

In both wings of the Palace at Arne, instead of the isolated *θάλαμος* at the back reached by way of the external corridor, a whole series of rooms extends away behind the megaron. And here not only are the rooms multiplied, but the corridor is duplicated. With all this new-fangled grandeur, however, the old-fashioned *θάλαμος* in the case of the north wing is not dropped entirely, but relegated to a new position in front of the porch, and there it is likewise reached by the corridor as of old.

We find, however, at Phylakopi that the living room is not so constantly an inner room as on the mainland, to judge by Mycenae, Arne and Troy II. Thus, for example, the double house of the Second City shown in *Phylakopi*, Fig. 31, and illustrated already in our Fig. 8, has the long living room in front and the (broad) sleeping room behind in both cases.

In this respect the underlying type of single two-roomed b'ut and b'en house, with living room in front and sleeping room behind, may perhaps now be taken as locally characteristic in the Aegean in the Middle Cycladic period. At Phylakopi at any rate it occurs in several variants, all in the Second City. Of such houses the most curious are those shown in *Phylakopi*, Figs. 34 and 37. Of these the house of Fig. 34 has two long rooms in front with one outside door to both, while it has a single broad room behind. The house of Fig. 37 again, looks as if it were on the way to becoming a megaron house like that of *Phylakopi*, Fig. 32, compared

¹ *Homerische Paläste*, 19, Fig. 9, systems marked black to left.

² *Ibid.* to right.

³ The thoroughway in the case of the megaron in the east wing at Arne is exceptional but not quite anomalous, as it occasionally exists elsewhere.

already with the megara at Arne. There is hardly any doubt that the broad room at the back here, which is reached no longer directly from the living room but indirectly by means of the corridor outside the porch and alongside of the living room, is the same in origin and function as the b'en or sleeping room of small size and broad type of *Phylakopi*, Figs. 31, 34, 37. It cannot be denied that these again have a very close affinity with Cretan b'en rooms of broad type, like the one in the Early Minoan house at Vasilikí, referred to already. The door of the b'en room here is seen shifting towards the middle as in Melos.

The b'ut and b'en House in Thessaly.

The closest and most startling analogies with the b'ut and b'en Aegean type of house of the Middle Cycladic period at *Phylakopi* are, however, to be sought, not in Crete, but on the mainland of Greece itself, and curiously enough not at Mycenae or Arne, but to our surprise still further north in Thessaly. This knowledge we owe to important discoveries made by Tsountas at Dimini and Sesklo.¹

The resemblance in question comes out at once if we compare with the *Phylakopi* houses the plan of the Neolithic house at Sesklo shown in Fig. 9.² Here we have the same b'ut and b'en arrangement of large and long living room in front and small and broad sleeping room behind as we found to be characteristic of the Melian houses of the Second City at *Phylakopi*.³

At Dimini again is a house of a similar type belonging to the same general period as the one at Sesklo and shown in Fig. 10.⁴ There is, however, a significant difference. The front room of this house is not elongated like the corresponding one at Sesklo: it is still more a broad room than a long one. In this respect it comes closer to the shape of the room behind and is more a mere repetition of that than is the case with the other house. As now this back room represents the original broad hut to which the front room came to be added in the course of development we

¹ Αἱ Προϊστορικαὶ Ἀκροπόλεις Διμηνίου καὶ Σέσκλου.

² *Op. cit.* 90, Fig. 18. For courteous permission to reproduce Figs. 9-13 I have warmly to thank Professor Tsountas.

³ The b'en room at Sesklo is identified with the sleeping room or *θάλαμος* also by Tsountas. See *ibid.* 91.

⁴ *Op. cit.* Pl. II. (2-4). This house is called Megaron A by Tsountas.

are justified in regarding the broadness of the front room at Dimini as an archaic feature.

We are all the more encouraged in this idea when we observe next the house at Dimini and left of it a semi-detached outhouse of one room

FIGS. 9-13.—NEOLITHIC HOUSES AT DIMINI AND SESKLO.

which again has a broad front.¹ It represents in this respect in quite simple form the original type underlying the rooms of the main building itself. There is, however, one difference, and this again may have its own significance. The door of the outhouse is not in the middle of the wall to

¹ *Op. cit.* Pl. II. 5 (Δ 3-4).

which it belongs, as in the case of the main building, but at the right end of this. Now we have seen already that this is a feature which appears in Crete in the case of the earliest houses we know of in the island. It occurs in the case of the room of the Neolithic house at Magasá, which in turn represents the original hut-type in Crete. It recurs again, as we have seen already in more than one instance, in the Early Minoan settlement at Vasiliki.

We have now to ask whether this resemblance is altogether an accident, or whether it is not rather based upon some underlying affinity itself resting upon prior ethnological connections embracing regions as far apart as Crete and Thessaly in one common whole. Certain very significant phenomena observable in the earliest settlement at Sesklo may help us towards some answer in the latter sense.

Thus let us take the one-roomed house marked 38 on Tsountas's plan of Sesklo and reproduced in Fig. 11.¹ We are struck at once by the fact that this house is not only identical in type with the one referred to at Dimini but that it is also of the same broad type with door at the right end of the front wall as underlies the Neolithic house at Megasá and the Early Minoan houses at Vasiliki. It is important further to note, however, that this house does not stand alone at Sesklo itself. We can see that house 39 belonging to the same earliest settlement is of the same type, and, though the position of the door in this case has not been ascertained, it is fairly safe to conjecture that it was analogous to that of the other. Taking the plan generally, even a cursory glance enables us to see that the broad form of room was of very frequent occurrence and that indeed it was the dominant type.

Equally interesting is it to note the process by which the underlying type becomes duplicated through addition in front in such a way as to form a b'ut and b'en house. Simultaneous with this is the tendency for the door to shift from the end to the middle of the wall in which it occurs. Both of these phenomena are observable in a typical instance in the first settlement at Sesklo. This is the house 8-9 shown in Fig. 12.² Here once more we have the time-honoured broad type of the primitive hut still adhered to, not only in the back room, but likewise in the front one. Who cannot see now that a type of b'ut and b'en house like this represents the prototype of a house like that of the second settlement at Dimini referred to already

¹ *Op. cit.* Pl. II. (38) 85.

² *Op. cit.* Pl. III. (8-9).

and shown in Fig. 10? Here also, as we have seen, the front room is still of the broad type.

At Sesklo we see this broad type of front room in process of transformation into a long one. And to convince ourselves of this it is only necessary to compare the house at Dimini of Fig. 10 with that at Sesklo referred to already and shown in Fig. 9. The house at Dimini thus provides us with an intermediate link in the process of development which enables us at one remove to connect the type with long front room, of Fig. 9 of the second town at Sesklo, with the more primitive one of the first settlement. This is entirely broad-roomed, and the central position of its doorways only separates it by one remove from the one-roomed Neolithic huts of Sesklo and the type shown in Fig. 11. This type of Neolithic hut again is identical, as we have seen, with the earliest prototype in Crete.

There is thus a very close affinity between the earlier and later types of houses in Crete and in Thessaly respectively in the prehistoric age, beginning with the most primitive prototypes of which we have any knowledge; this conclusion is now more than justified by the new evidence from Dimini and Sesklo of which we have been speaking. That these architectural affinities are based upon underlying affinities of an ethnological character may accordingly be taken to be no longer a mere conjecture, but a view which is warranted by the new evidence. And of these ethnological connections again it is fair to affirm that they fall into line with similar phenomena in other parts of the Mediterranean, in being of southern origin and not being derivable in their immediate antecedents from any part of East-Central or Central Europe.

The Central Hearth in the b'ut and b'en House in Thessaly.

It will be remembered that we have already referred to the close resemblance between the b'ut and b'en house-type of Dimini and Sesklo, and that of the Second City at Phylakopi.

In Thessaly, however, we have certain features which are not present in the same form in the Aegean.

In the first place, there is the open portico in front. This had two wooden columns in the case of the house at Dimini.¹ On this analogy

¹ Tsountas, *op. cit.* 54.

Tsountas reconstructs the house at Sesklo with two similar columns.¹ On the other hand, the shallow portico of Megaron B at Dimini does not seem to have had the columns.²

Corresponding to this at Phylakopi is a porch-like front corridor entered from one end ; this we have seen already in Early Minoan Crete ; the origin of the type there found may probably in turn be traced in one variant which occurs in the entrance to the Neolithic house at Magasá. The orientation from left to right fronting the inner door on entering, as at Magasá, is a very favourite one both in Early Minoan Crete and in the Second City at Phylakopi.

Considering connections like these we need not be too much startled to find that the same porch arrangement recurs again on the mainland of Greece and, of all places, at Arne. Here it is of a more spacious palatial form approaching a square, but here once more the entrance from the side is characteristic.

Once we have an ' Aegean ' porch of this kind represented on the mainland of Greece at a palace so typically ' Mycenaean ' as that of Arne we need no longer be alarmed at the mainland portico with columns in a type of house so characteristically ' Aegean ' as the Neolithic megara of Dimini and Sesklo in Thessaly. In case we should happen to be apprehensive it might, perhaps, be as well to remember the analogy of the corridor system of back rooms behind the megaron at Arne, with the *θάλαμοι* reached by a separate passage of the late Second City at Phylakopi. The moral is that ' Aegean ' and ' Mycenaean ' here have to be treated with a certain amount of give and take, but not in such a way as to imply an entire derivation either way. Otherwise we might run the risk of forgetting the underlying unity that has already been shown to exist as well in the Thessaly of the late Stone Age as in the Aegean and Neolithic Crete.

In the second place, at Dimini and Sesklo there is the central hearth.³ This is a feature which has not as yet been identified anywhere at Phylakopi except in the megaron of the Mycenaean palace, which is of mainland type.⁴

There is hardly any doubt, however, that from the earliest times, and beginning with the primitive one-roomed hut, there must have been some arrangement of an analogous kind for heating and cooking purposes.

¹ *Ibid.* 89.

² *Ibid.* 60 and Fig. 11.

³ Fig. 9, room 2, and Tsountas, *op. cit.* 90.

⁴ *Excavations*, Fig. 49 ; *B.S.A.* xi. 221, Fig. 4.

Under primitive conditions and in a southern climate in summer, the fire is lit for the cooking of meals and then allowed to go out again. In the winter the fire tends more to become a permanent institution. These circumstances would apply to the huts of Neolithic Crete and to many of the one-roomed houses of the First City at Phylakopi.

Under less simple conditions of life, in houses of more than one room, the fire, following old usage, continues to be lit in that room of the enlarged house which represents the primitive hut. It is only ousted from here as the functions of the rooms alter. This happens when the room which represents the original hut becomes a back or sleeping room on the addition of a new living room in front. This, as we have seen, is the case with many of the houses of the Second City at Phylakopi. But the fact that no hearths were found makes it very likely that in the Aegean, by the time of the Second City at Phylakopi, the portable hearth had already been long in vogue.

The most primitive conditions may be conceived as being somewhat like those of the Mediterranean shepherd of the present day, who lights his fire on the floor of his one-roomed hut as required and as best he may. The earliest refinement on primitive conditions is that in which the fire is placed in a position sheltered from draughts. This precaution is primitive and is never absent! The best way of obtaining freedom from draughts under simple and early conditions is that of having the door at the end of one of the long walls in the case of a rectangular hut, as in Neolithic and Early Minoan Crete and the Sardinia and Corsica of the present day.¹

In a warm climate, however, like that of the Aegean in summer, the drawback of having the after-heat linger in a room long after the fire is allowed to smoulder out must at a very early period have suggested the convenience of the portable hearth. This has a double advantage. In the first place it can be lit outside and then brought in when the smoke has abated and the fire is ready, and in the second place it can be put outside again altogether when there is no longer any use for the fire. We thus see that the refinement represented by the use of the portable hearth in a southern climate is not the most primitive condition, but one following out

¹ The recent influence of Italian house-forms in the case of Sardinia, and of French ones in that of Corsica has worked much confusion. And the result is lamentable when the time-honoured rules about the sheltering and isolation of the central hearth thus come to be ignored. For a stranger, existence in such an environment of acrid smoke blown about by draughts is simply impossible.

of that. The portable hearth, however, when required for heating purposes in winter, becomes a central fire as of old. People gather round it to warm themselves, and primitive conditions are restored again. The portable hearth is essentially a central hearth. Its use has remained a time-honoured institution in the Aegean till the present day.

What now happens in parts of the Mediterranean further north, where climatic conditions are more rigid in winter than in the Aegean? Here again modern analogies are of help to us. Thus in Sardinia and also in Corsica, which are on a level with Thessaly, the central hearth is a fixture which has survived to the present day just as, under milder climatic conditions, the portable hearth has done in the Aegean. So much is the central hearth in vogue in these islands that, even if the house has two storeys, the time-honoured central hearth is still kept up and placed in the upper storey! In Sardinia and Corsica the use of the central hearth passes almost entirely into abeyance in the summer, except on chill evenings and for cooking purposes.¹

In correspondence with these climatic conditions, as we have pointed out already, is the tendency in these islands to isolate the central hearth room, and if this is not possible, at least to shelter the central hearth. In normal circumstances which permit the time-honoured regulations to be carried out under simple conditions, the central-hearth room has only one door, and this is preferably at the end of one of the long walls of the room if this is not quite square. Immediately behind the door is a shuttered paneless window which along with the door is the only means of admitting light and air. This window is shut in chill weather and is hardly ever opened in winter. Sometimes it is in the upper half of the door itself.

This kind of room comes nearest to primitive conditions in the Mediterranean, requiring the use of the central hearth whether in pre-historic times or as among shepherd people of the present day. Everywhere, however, there are observable in the distribution of rooms reminiscences of climatic conditions in the Mediterranean which had not had to take the same account of the central hearth as a permanent institution as it does in the upland parts of Sardinia. At a very early age in the southern parts of the Mediterranean, household architecture attained to a high degree of elaboration, apart from such considerations

¹ Modernizing influences are bringing in the cooking-oven and the wall fire-place with chimney.

altogether, or only with a limited reference to them. Ample illustration of this phenomenon is now available in the Aegean through discoveries in Crete which go back to Early Minoan times. One has only to consider such thoroughgoing interconnections as are represented for example at Vasiliki to know what this meant. In such early systems, once through connections have come to be established between room and room without reference to the needs of the permanent central hearth, these arrangements tend to be kept up even in circumstances requiring a permanent central hearth, and in spite of that. Many anomalies that are noticeable in Mediterranean central-hearth houses are to be accounted for in this way.¹

Other anomalies arise through addition of room to room in a way leading to a change in the function of these. Thus, for example, in the Sardinia and Corsica of the present day, there are many b'ut and b'en houses with a living room in front and a sleeping room behind. Here then we have a transformation of the simplest conditions, with change of function of the original hut-room, analogous to what took place in the East Mediterranean in prehistoric times. The central hearth is now in the front room in Sardinia, just as in Melos of long ago the front room became the living room in the Second City at Phylakopi. In Melos in the Second City of Phylakopi we have not the fixed central hearth, but we have suggested that instead of it the portable hearth was in use in the mild climate of the Aegean. The proper place for this now under the altered conditions which gave rise to the b'ut and b'en type of house was again the front room.

When, however, we go further north to Dimini and Sesklo in Thessaly we have already in late Neolithic times conditions exactly analogous to those that hold good of the b'ut and b'en houses of Sardinia of the present day. In the b'ut and b'en houses at Dimini and Sesklo there is a fixed central hearth, and this is in the front room. So it is in Sardinia, in houses of the same kind. In Sardinia on the b'ut and b'en arrangement, which does not admit of the isolation of the front room, we find that the central hearth is shifted from its usual central position. This is all done with a view to avoiding the through current which is apt to pass between the b'ut and

¹ Collusion with foreign house types in which the central hearth did not play a part was a fertile source of anomalies in later times. This was apparently what happened with the Frankish house of the Middle Ages.

b'en door. The hearth thus comes to be towards an angle, but always in such a way that people can still sit round it.

This again is exactly what we find happening in the case of the Neolithic house at Sesklo. The genesis of this type of house, as we have seen, was such that the room corresponding to the original hut of a one-roomed house has become a back room on the addition of another room in front. Not only so, but the back room again, through this addition in front, has now all but lost the light it had as a hut direct from the door. Thus, if it is not to remain a dark cellar-like room, it has now to be provided with some sort of window. As an alternative it has to be borne in mind that if the window occurred already in the primitive type of hut, it would, according to modern analogies, be in the same front wall of the hut as the door, and as near as possible to that, if not in the upper half of the door itself. The addition now of the front room would transform the original outside door into an internal one. The window on the other hand would become useless in the old position and would have to be removed to a wall with an external outlook. In all this it has to be remembered that it was in the room which has now become a b'en room, that the original fire, whether temporary or permanent, was wont to be lit. Another matter that has to be borne in mind is that the addition of the new room has involved a distribution of functions over two rooms which were originally concentrated in one. This did not happen without certain compromises of a very curious character. What in the new circumstances is the back room was in its original hut-condition an isolated room by itself, without the possibility of through currents, and the kindling and presence of the fire there was a simple matter of course. It was living and sleeping room in one. Now, however, it is no longer a living room, but a sleeping room of a much more private character, and thus the temporary, or permanent hearth is no longer in keeping there. The living room under the new conditions is the new one which has been added in front, and the fire has accordingly to be here.

This process of division of function is entirely organic and natural, and all domestic architecture in its development is but a continuous illustration of the new practical difficulties that are apt to arise and that have to be overcome in consequence of its necessary action.

Such a difficulty has arisen here on the translation to the front room of a b'ut and b'en system, of a fire that originally belonged to the simple

primitive arrangements for cooking and heating proper to the one-roomed hut. The difficulty was found to be of a lighter and less serious character in those warm southern parts of the Mediterranean, where the fire was of a more temporary nature, and especially where the portable hearth may have been already in use, as in the case of Crete and the Second City at Phylakopi. Much primitive experience with temporary fires is presupposed in a process of selection such as gave rise under these conditions to the institution of the portable hearth.

Far more serious is the difficulty further north, as on the mainland of Greece, where the greater rigidity of the climate has led to the transformation of the primitive temporary fires of the south into a permanent institution necessitating the installation of the fixed central hearth.

We have seen already how the genesis of the b'ut and b'en arrangement has, *ipso facto*, led to the possibility of through currents. We accordingly now understand the difficulty that arises with the fixation of a central hearth that can no longer have that central position it had on the original arrangement, if in this way it would come to be on the line of the through current. Therefore it has to be put somewhat to one side out of the current! This now is precisely what has happened at Sesklo. As the plan of Fig. 9 shows us, the hearth here is not on the line between the b'ut and b'en door, but in the protected angle to the left as one enters the front room.

More curious still is the phenomenon presented by Megaron B at Dimini shown in Fig. 13.¹ Here, apparently to avoid the draught, the fire-place is shifted to a position against the back wall of the room, and to make space for it the door to the b'en room is correspondingly shifted to the left end of the wall. The fire-place thus loses its central function altogether, and it assumes an entirely anomalous character as compared with the other more normal type of central hearth of Dimini and Sesklo.

In Megaron A at Dimini which with its broad front room is of more archaic type than the one at Sesklo, the hearth, to be sure, is in an almost central position a little to the left of the axis between the b'ut and the b'en door. Here, however, it must be remembered that the central position of the fire was the ideal one in primitive conditions. Resting as it did upon primordial tradition, the builder always aimed at giving it this central

¹ *Op. cit.* Fig. 11.

position, unless very special circumstances, such as through currents, interfered. It is very probable, as we have suggested, that such circumstances did have their influence in the case referred to at Sesklo, and that they did not at Dimini. The b'en room at Dimini is built against the fortifications, whose anomalous curve round indeed forms the back wall of the room. In this back room accordingly there was no opening. Tsountas again gives reasons for regarding the room as older than the one in front.¹ In that case as a one-roomed house it would have received its light from the door, and there would have been originally no openings in the side walls either. If then these walls were not opened up later as an afterthought on addition of the front part of the house, we should have a dark room. This accords with Tsountas's suggestion that the place in its later form was used as a mere cellar for storing grain.² In that case the through current, whose presence was apt to influence the normal position of the central hearth, would not exist, and there would have been nothing to prevent that central position for the hearth which under primitive conditions, as we have said, always remained the ideal one.

The first and most primitive stage in architectural development then is one in which the household fire, whether permanent or temporary, has its place in the centre of the one-roomed hut. The second phase, represented by the addition of a front room to the original one-roomed hut, shows the fire removed to this front room, as at Sesklo. The third stage in development, marked by the fixation of the central hearth in its final position is a return to primitive conditions, and this we have represented for us in the megara at Tiryns, at Mycenae, at Arne, and at Troy II.

This return to primitive conditions was facilitated by the following circumstances:—in the first place, the people who created a type of b'ut and b'en house like that at Sesklo are not living in an age in which all memory of the primitive central fire of the one-roomed hut is forgotten, but in the midst of a population of poor people with one-roomed huts in which the central fire is a matter of daily use and custom. And in the second place, the genesis of the room added in front is such that it is meant to be a repetition in type of the original room. The b'ut and b'en character of the house has emerged simply as a result of the process by which the new room is added in front of the old one. Although the new front room now turns out to have two doors, one in front and one behind, the underlying original

¹ *Op. cit.* 52.

² *Ibid.* 52.

type had only one. Indeed it may be said that the intention was all along that the living room should not be a through room. As a matter of fact, however, and in those circumstances in which the added room was put in front of the other, this intention could not be carried out systematically without such afterthought as is not apt to be present in early and tentative phases of development which have once left the primitive hut stage behind.

In the Aegean and in Crete this difficulty apparently never occurred. The general use of the portable hearth in the milder climate of the south could much more easily accomodate itself to the new conditions than the fixed central hearth of Neolithic huts in the more rigid climate of mainland Greece. Once the smoke is gone and the embers are red, the portable hearth can be brought inside and shifted about into any position and from one room to another, somewhat in the manner of a modern Mediterranean charcoal brazier. Thus, for example, in the Second City at Phylakopi, where the b'ut and b'en arrangement is so closely analogous to that of the Neolithic house at Sesklo, the portable hearth would be usually in the front room, but it might be in any position there ; if the hearth were properly prepared outside, no inconvenience would be caused by smoke blown about by draughts. It could thus be a central hearth as of old. It could also at bed time in winter be put into the b'en room.

This could no longer be the case with a permanently fixed central hearth like that at Sesklo, on which the fire is lit inside, and which consequently requires a hole in the roof to let out the smoke. The avoidance of draughts under such circumstances is a paramount consideration. It is, as we have seen, this consideration entirely that accounts for the curious eccentric position of the fixed central hearth at Sesklo and its complete loss of centrality in the case of Megaron B at Dimini.¹

The meaning of this phenomenon in its general connections is this :— the b'ut and b'en type of two-roomed house was already in existence in the Mediterranean at a time anterior to the fixation of the central hearth in that unchangeable position it later came to have in the Mycenaean megaron. That this was so on the mainland of Greece we now know from the Neolithic house at Sesklo. This example shows us the process by which in a north Mediterranean latitude a central hearth, which originally had its place in the middle of the one room of the most primitive type of house, comes to be removed from the later representative of this

¹ Megaron A, Megaron B, here refer to Tsountas's designations.

room to the new front room. Here, however, though its presence is justified by the functions of the new room, it is no longer in place in the old sense of the word, since the new conditions have introduced a possibility of currents which did not exist under the primitive arrangement. At this stage efforts at readjustment, such as we see taking place before our eyes at Dimini and Sesklo, are inevitable, but they are all unsatisfactory, and the final solution of the difficulty is a return to primitive conditions.

The Central Hearth in Thessaly and at Mycenae.

In considering now the genesis of a type of megaron with central hearth, like that of the mainland of Greece in the Mycenaean Age, a form of hall like the elongated front room of the house at Sesklo cannot be left out of account. Neither can we afford to ignore the more archaic variant of this represented to us by Megaron A at Dimini, in which the front room, though already slightly larger than the back one, is still of broad type. It would again be unfair to the evidence to take this by itself and not refer back its type to the still earlier broad-roomed house 8-9 of the first settlement at Sesklo (our Fig. 12) in which the front room this time is not yet larger, but is even smaller, than the back one. If it is not seen that there is a process of development represented in the sequence by which those earlier and later types follow upon each other, it will be difficult ever to arrive at any reasonable explanation of the phenomena consistent at the same time with the general evidence from other parts of Greece and the Aegean. We have already seen that the same type of house is present in the Cyclades as early at least as the foundation of the Second City at Phylakopi, while a broad-roomed variant, coming very close to the b'ut and b'en broad-roomed house 8-9 at Sesklo, exists in Crete (Vasiliki) already in Early Minoan times. It would be rash to make either of these earliest broad-roomed types—the Cretan and the Thessalian respectively—dependent directly on the other. Yet that there is affinity of a very close kind, we have suggested already, for the very good reason that both go back to an earlier prototype of broad-roomed hut which is found to be identical in Thessaly and in Crete at the earliest period of which we have any knowledge.

In the course of our argument hitherto we have indicated various

circumstances which point towards the conclusion that the Neolithic civilization of the Mediterranean is of southern origin, and that, further, the migratory movements which were taken as initiating that civilization were in a direction which was from south to north, rather than from north to south. The only new data that would be calculated to overthrow this view as regards the Aegean would be such as would tend to show that the earliest occupation of mainland sites so far north as Dimini and Sesklo was anterior to the first settlement of Neolithic Crete.

The general tendency of the evidence, however, is rather in the other direction. The Neolithic deposits of the Thessalian sites, in their higher levels at least, coincide with what is already Early Minoan in Crete.¹ Accordingly further evidence is required to show that the earliest strata of enormous Neolithic deposits like those of Knossos are not contemporary, if not anterior, in date to the earliest settlement of sites like Dimini and Sesklo.

Considering the formation, through severance, of distinct ethnic unities that took place at so early a date as the formation of the earliest Neolithic deposits in Crete and in Thessaly respectively, we need not expect very close affinities in detail in later times, after the work of local differentiation has once proceeded far upon its way.

We have seen that Neolithic huts at Sesklo are of exactly the same type as the prototype of Neolithic houses in Crete. There is again only a distinction in detail between a broad-roomed b'ut and b'en house of the earliest settlement at Sesklo and such a house in Early Minoan Crete. In the Second City at Phylakopi once more we have local variants that in some instances point to Thessaly, and in others again as strongly to Crete. The only difference between the b'ut and b'en house type most characteristic of Middle Cycladic Melos, and that of Thessaly, is that the latter has, and the former apparently has not, the central hearth. Yet the type of the Pillar House in the same Second City of Phylakopi quite as closely resembles those of Middle Minoan Knossos. In Melos there is hardly any doubt whatever that Thessalian and Cretan affinities coalesced in the time of the Second City. But no such coalescence took place in Crete itself, or at what for our purpose may be regarded as the other extreme of Thessaly. The broad-roomed b'ut and b'en type of house in Middle Minoan Crete is

¹ See *Classical Review*, xxii. 236.

already a considerable distance removed from the Thessalian b'ut and b'en megaron with elongated front room and central hearth.

The process of differentiation at the opposite poles of Crete and Thessaly respectively, took place on gradually diverging lines. And it is this local process of gradual differentiation that accounts for the enormous difference in character in the final outcome of architectural development as represented respectively by the palaces of Crete and those of Arne, Tiryns and Mycenae.

Were it not for a b'ut and b'en house-type like that of Dimini and Sesklo, it would indeed be more convenient to regard a type of megaron like the Mycenaean one as being directly derivative from the primitive one-roomed hut with central hearth of Neolithic times of the mainland of Greece. And as a matter of organic development, there is no doubt that megara, like those of the Palace at Tiryns and the house south-east of the Grave Circle at Mycenae, represent typologically a reversal to the primitive type in which the room is isolated, and the hearth is installed in the centre as of old. The persistence and survival of the type would in this sense be owing to its primitive adaptability to the central-hearth arrangement which climatic conditions had made customary on the mainland to an extent for which there is no parallel in the Aegean.

There are, however, several reasons why the intermediate link represented by the b'ut and b'en megaron of Neolithic Thessaly cannot be left out of account. In the first place, in the more advanced type of this megaron we have a distinct bond of connection with the later, Mycenaean megaron, in the elongation towards the front of the central-hearth room. There is every probability that the giving up of the central hearth in the room which originally had it, and the installation of it in the new front room had something to do with this elongation. And the discovery now of the broad-roomed huts of Thessaly with doorway at the end of the front wall gives new point to what previously was hardly more than a reasonable conjecture. As can be seen by reference to the diagram of Fig. 14, once one entered a hut of this kind and looked towards the central hearth and the back of the room behind, what confronted one from the point of view of the depth of the room was no longer a broad room but a long one.

In a room of this kind we have the true and earliest prototype of every Mycenaean hall. Thus it turns out that the elongation of the front room in

the case of the b'ut and b'en system was simply a repetition of the proportions and arrangement of the original hut room.¹ The through door to the back room was the one anomaly here. But the genesis of this was a perfectly natural one, and we have already seen it emerge in the Aegean under circumstances in which it was unnecessary to take account of the central hearth. There it had a long history. On the mainland we see it later eliminated in the case of the Mycenaean hall. This elimination, however, was not of the nature of a new and unheard of transaction, determined upon once for all by a particular architect, but a natural process of return to primitive conditions that never ceased to be present in the simpler habitations of men.

FIGS. 14, 15.

FIG. 14.—CENTRAL-HEARTH HUT WITH DOOR AT END OF WALL.

FIG. 15.—DEVELOPMENT OF PORCH.

In the next place there is the side position of the outer door in its relation to the genesis of the entrance porch. The germ of all this is already present in the shape of the door at the end of the front wall of the original hut, as shown in the last diagram. The device now of separating off the living room by means of a short internal wall as one enters is responsible for the entrance porch which appears in the diagram of Fig. 15. The side door and this entrance porch are features which have a very wide range, not only in the Aegean, but on the mainland of Greece. The Cretan Neolithic house at Magasá presents it in a somewhat anomalous but already advanced form. It occurs later, as we have seen, in Early Minoan Crete, where the prototype is represented in the ossuary at Kastrí, and where it already performs a regular function in the case of houses like those at Vasilikí. It is a feature of very frequent occurrence in the Second City at Phylakopi. It recurs again on the mainland at Arne;² and the side doors of the *prodomoi* at Tiryns are more than a mere reminiscence of this arrangement.

¹ There is thus no longer any need for the suggestion made in *B.S.A.* xii. 254-5.

² Noack is evidently somewhat perturbed by the presence of the porches with side-door at Arne and strives to ease his conscience by explaining them away as a case of concession to special circumstances. He then warns us as to what we are not to think about them: 'sie dürfen daher nicht etwa als Vertreter eines besonderen Haustypus mit antenloser, allseitig umbauter Vorhalle . . . angesehen werden.' *Hom. Paläste*, 20.

Further, there is the presence of the *θαλαμος* or sleeping room which, as we have seen, is a b'en room in the case of the Neolithic megara of Thessaly and an isolated back room in certain types of Mycenaean palace. This isolated back room does not exist, to be sure, at Tiryns, but elsewhere

FIG. 16.—HOUSE OF PERIOD II. AT PHYLAKOPI.

it occurs in regions as far apart as Arne in Boeotia and Melos in the Aegean.

An interesting Melian example is the house of the Second Settlement referred to in a previous passage and shown in Fig. 16.¹ In this case there is no direct access from the living room or megaron to the sleeping room behind and this is reached in an indirect way by means of a separate corridor which passes to the back alongside of the megaron and outside of

¹ *Excavations*, Fig. 32. Reproduced by kind permission of the Council of the Society for the Promotion of Hellenic Studies.

that. The same corridor and the same isolated back room exist in the case of the palace at Phylakopi.¹

With these examples we have already compared the arrangement of megaron with separate corridor to back rooms at Arne.

The Palace at Arne now represents a process of development which, as regards the time-honoured back room, comes out in very strong contrast to that at Tiryns. The old-fashioned back room, as we have seen, has at Arne become multiplied many times over into a rather formidable system, and not only are the corridors lengthened to such a degree that they go, so to say, to infinity but they occur in duplicate. With all this somewhat monotonous grandeur, however, the arrangements for sleeping are seemingly repeated so many times over that the whole building looks more like the barracks of a garrison than the palace of a king.

The final tendency of development is represented, not at Arne, but at Tiryns. Here the old-fashioned back room is found to be entirely out of date and no longer of any use, and so it is simply dropped. But it does not disappear without leaving a reminiscence of this process of atrophy in the shape of the outside corridor. This is still retained everywhere as a useful means of communication, and in the case of the Second Megaron at Tiryns it even goes right round behind. We should have something entirely analogous to this at the palace of Phylakopi, supposing the back room there were cancelled and the corridors retained.

Now in all this there would be no point whatever in comparing what is earlier with what is later over so wide a field, did we not recognize that there is a sequence in the phenomena which is not confined to one locality. And the true meaning of this sequence is that there is an underlying connection between the earlier type of b'ut and b'en megaron and the later one in which the megaron is isolated and there is no longer any passage through it to the sleeping room.

The earlier state of things is quite clear at Dimini and Sesklo. And there we have an isolation of the phenomena at a very early period which, so far as we can see, is quite free from collusion with foreign types of house that are not Mediterranean in origin.

At Phylakopi in Melos, in the Second City, we have the earlier b'ut and b'en megaron and the later type with isolated living room existing side by side.

¹ *B.S.A.* xi. p. 221, Cretan Palaces I. Fig. 4.

Even Arne, with its unity of construction proper to a palace, does not tell a different story. Here the north megaron is an isolated room, but the corresponding apartment in the east wing is of a b'ut and b'en character as at Dimini and Sesklo, and the doorway through its back wall is more than a mere faint reminiscence of an earlier state of things.¹

From what has been said, then, there can hardly now be any doubt that a connection exists between the earlier phenomena at Sesklo and the later ones at Arne and Phylakopi. In that case we have to conclude that the transition from earlier to later has been brought about through the surrender of the b'en door in the later type of hall. That this doorway should have persisted in one instance even at Arne, only points to the strength of this immemorial tradition which justified its survival to so late a time. It is, as we have seen already, the original hut door! When once this outside door was incorporated into the internal structure of the b'ut and b'en house, it was only as the result of a long process of organic reaction that it finally became eliminated.

What gave persistency to this curious process of reaction was the fact that the b'en door owed its inclusion in the new arrangement to false pretences. True enough, it represented the old hut door, but instead of being an external door it was now an internal one. Again, as Megaron A at Dimini with its broad front room shows, it is equally true that the front room of the b'ut and b'en house with its central hearth was meant to be a repetition of the original hut with its primitive central fire. The only point of variation from it was the through door to the back room.

We have already indicated the practical difficulty that arose on the transference of the central hearth from its traditional position in the room corresponding to the primeval hut to the front room. This difficulty, as we have seen, depended on causes which were inherent in the very process of transformation to which the front room owed its existence. Originally an isolated one-doored room, it now at one stroke had two doors: one in front and one behind. Nothing could have been more unlike its original character. And once given the possibility of through currents on the b'ut and b'en arrangement, nothing could be more out of keeping with that isolation of the living room which made the central hearth the most natural thing in the world in the case of the primitive hut.

In the case of Megaron A at Dimini we saw the hearth still naïvely

¹ See *Homerische Paläste*, 19, Fig. 9.

put in the centre of the room. But, as we have seen, the megaron at Sesklo has it shifted to the side out of the current, while Megaron B at Dimini has recourse to the unheard-of expedient of placing the hearth against the back wall of the room, the b'en door being shifted to the left side to make room for it.

The organic solution of the difficulty was the elimination of the b'en door and the creation of another means of reaching the back room, in the shape of the outside corridor.

This process of development, as we have seen, was all the more natural as it was really in a new form a reassertion of an earlier and more normal arrangement which was still in daily use among simple people living in one-roomed huts. In those earlier conditions, as any simple peasant could point out to the lord of the manor, there could be no real warrant whatever for the through door, if the front room with its central hearth were really to be true to the character of the primitive one whose arrangements it imitated.

The final outcome of the process of organic elimination is to be seen at Tiryns. Here, as we have seen, the old-fashioned back room, having lost all importance in the grand palatial system, besides being spatially awkward as well, is simply dropped.

What we have, then, at the end is the final fixation of the central hearth in an isolated megaron, which, in one form or another, was present from the beginning, was the ideal all through, and received its final apotheosis in the megara of Mycenae and of Tiryns.

In tracing the evolution whereby the central hearth became a feature in an isolated living room, we must never forget the simple conditions in which the process of development started with the original hut. These conditions we now see before our eyes in the primitive huts of Neolithic Thessaly on the one hand, and of Neolithic and Early Minoan Crete on the other.

The original type of hut we found to be identical in either case. The one distinguishing difference at the beginning is that on the mainland of Greece we have a central hearth, while in Crete and the Aegean we have none. In the mild climate of the south, fires are of a temporary character, and portable hearths must have been a very early invention, whereas in the more rigid climate of North Greece the fire comes to be a permanent institution, and the central hearth as a fixture is a necessity. Seeing then

that the type of hut at the beginning is found to be identical in Crete and in North Greece respectively, it is perfectly natural to trace back to different climatic conditions the one feature of the fixed central hearth, which distinguishes Northern Hellas from the Aegean.

The process of development in these conditions was clearly one in which the temporary fire, round which people sat for warmth, but which never was a permanent institution in the south Aegean, was by a gradual process adjusted, and finally became permanent in the more rigid climate of mainland Greece; until at last it attains the glorified form which is represented to us in Mycenaean palaces.

In spite of the elaboration of its later form, there is no reason to suppose its origin was less primitive than what may be found in a Mediterranean shepherd's hut of the present day. In a hut of this kind, in case of its migration to a colder climate what was a temporary fire merely becomes a permanent institution. In the upland wilds of Sardinia of our own time we have the same illustration of this process as we have in Thessaly of the prehistoric age.

We have seen already that the underlying connection between the Aegean and North Greece in the earliest period of which we have any knowledge has now become much clearer since Tsountas's fortunate discoveries at Dimini and Sesklo have been made available for study. And we now only follow Tsountas himself in his cautious suggestion to the effect that this connection was one which was between south and north, not one between north and south.¹ Thus we have to interpret the process of development as having been one in which in primitive conditions the temporary fires of the south became transformed into permanent fires on fixed central hearths in the north. In interpreting the phenomena, we have no justification for asserting that a central hearth which was a permanent institution in Thessaly was given up in the milder south in favour of temporary fires. A process of development which would be in the direction of this kind of elimination and dissolution at an age so early as that of which we speak could never have given rise to an architecture like that of the East Mediterranean, whether on the mainland of Greece or in Crete.

The conditions pre-supposed at Sesklo are the following:—1. The central hearth in a one-roomed broad-fronted house which did not have this arrangement in the more southern parts of the East Mediterranean,

¹ See Tsountas, *op. cit.* 398.

but which on the other hand was entirely adapted to its use under changed climatic conditions, owing to the simple isolated character of the room in such a type.

2. Alongside of this we have the central hearth in the front room of a b'ut and b'en type of house. This type of house had equally come into being without reference to the exigencies of the fixed central hearth. In this case, however, the b'ut and b'en character of the house was entirely unsuited to such an arrangement, owing to its creation of through currents.

In the first case referred to the process of architectural development only demanded that the isolation of the central-hearth room should be kept up, and as a matter of fact we find that it is so kept up.

In the second case the process of development required that the through passage of the b'ut and b'en system should be given up, and this, as a matter of architectural history, was what happened.

We have to remember once more that the original prototype hut, underlying the whole later process of development, was found to be identical in Crete and in Thessaly. In keeping with its primitive character it started its existence as an isolated room.

This isolated room in Crete to all appearance did not possess the fixed central hearth; in Thessaly it did. In other words, a type of room which originally did not have the fixed central hearth in the Aegean, is found to have this as a permanent institution on the mainland of Greece as early as the Neolithic age. This we now know from the discoveries at Dimini and Sesklo; and the new knowledge only adds point to what I ventured to suggest in this connection on a former occasion.¹

The phenomenon really turns out to be of capital importance, since the absence of the central hearth in the one case, and its presence in the other, are found to affect all later architectural development. There is no getting over this.

The isolation of the one living room, as we have seen, in the case of the primitive hut is something quite primordial and given as an irreducible fact at the start.

Now in a southern climate like that of Crete, with no fixed central-hearth arrangement to bar the way, we find that the primitive isolation of the living room is apt to disappear when it becomes a unit in an architectural system, and that thoroughgoing interconnections are started at a very

¹ 'Cretan Palaces,' II., *B.S.A.* xii. 250-1.

early phase in development. Even an upper storey can be added above the living room, and side rooms begin to open off the b'ut and b'en system without any difficulty.¹

In contrast with this we find that the isolation of the living room with the fixed central hearth on the mainland of Greece shows as strong a tendency to be kept up. At the earliest stages in development, as represented in the first settlement at Sesklo, it is not a case of giving up interconnections that were already there, but of preserving if possible intact an isolation of the living room which, when all is said and done, was always in accordance with its primitive character.

This isolation, besides being natural to begin with, was convenient as well under circumstances which made the fixed central hearth a permanent institution. In the first place the fixed central hearth requires a hole in the ceiling for escape of the smoke. Thus there could be no upper storey above a living room of this kind. As we saw, there was no difficulty at all of this kind involved in the case of Crete, and the development of upper storeys there is a universal phenomenon.² So great, indeed, is the smoke vent difficulty in the case of a central-hearth house, that if this is to have an upper storey over the room that originally had the central hearth, this has now to be removed to the upper floor as we have seen to happen frequently in the case of modern Sardinia. But living rooms of the megaron type on upper floors are bound to be always an inconvenience under primitive conditions, unless indeed we have to do with a steep site. Yet this possibility is not entirely to be left out of account in dealing with Greece of the prehistoric age. The removal, however, of the central-hearth room to the upper storey would not annul the cause of isolation present in the shape of the roof vent, since there in turn the hole for smoke would stand in the way of further storeys above. That the necessity for this roof vent was a fertile source of isolation for the central-hearth living room is so perfectly clear that it would have been well if criticism like that of Dr. Noack had taken its possibility more into account.

Analogous to the device of removing the central hearth to the upper room in a two-storeyed house is that of transferring it to the front room in a b'ut and b'en system like that of Dimini and Sesklo. There is com-

¹ Note, for example, the way in which a side system opens off room 15 of the Early Minoan house 15-16 at Vasiliki. *Gourniá*, Plan on Pl. XII.

² As a neat illustration of this for Middle Minoan times, see the porcelain plaques with house façades from Knossos shown in *B.S.A.* viii, 15, Fig. 8.

promise in either case. Here, however, it is of a much more serious character, since what is compromised now is the isolation of the central-hearth room itself. But all this happened, so to say, before the people who added the front room realized what they were about. The door of the room which corresponded to the original one had been there at the outset; but it was now an internal door, and in its new character as a b'en door it was all the more intrusive because it was there as a *fait accompli* before the consequences of its presence could be properly realized.

The b'ut and b'en system in its very nature is inconsistent with the exigencies of the fixed central hearth; *ipso facto*, the doubt is apt to arise as to whether the plan of building one room in front of another did not originally emerge under circumstances in which the central hearth was a negligible element. We found the broad-roomed b'ut and b'en system already an accomplished fact in the first settlement at Sesklo. Did it then have its original genesis there, or are we not rather to assume as probable that it was already in existence in other parts of the East Mediterranean further south, before it got as far as Thessaly? The architectural phenomena of Early Minoan Crete point distinctly in this direction. The broad-roomed b'ut and b'en system occurs again and again at a very early period in Crete, and at Vasilikí it even enters as a unit into an elaborate architectural system of a palatial character. Anything so complex as this in Early Minoan times presupposes many previous stages of development of a simpler kind, going back to remote beginnings in Neolithic times. The Neolithic hut with porch at Magasá itself indeed rather prepares us to expect further surprises of a similar character, going back to an equally early period.

If we now sum up the latest evidence, whether from Crete or from the mainland of Greece, we find that it is in favour of the following general conclusions:—

1. The one-roomed hut is what we have to start with. The central hearth as a permanent institution was not in vogue in the southern parts of the Aegean or in Crete. Accordingly under these circumstances, when room came to be added to room in the course of development, the isolation of the primitive hut is apt to disappear in favour of thoroughgoing systematic interconnections. That this process had already reached a high degree of development in early Minoan Crete we now know from sites like Vasilikí, Psira, and Mochlos.

2. In the more rigid climate of mainland Greece, where the central hearth is seen to be a permanent institution, the isolation of the living room tends to be kept up from the beginning. In the case of the one-roomed house, this isolation survived continuously all over the area where the central hearth was in vogue.

3. When the central hearth is installed in a type of room like the front room in the b'ut and b'en type of house, which does not already possess the requirement of isolation, this isolation is found to reassert itself later on, as the result of what can only be called an organic process of elimination, which is a return to normal conditions. A process of this kind is presupposed in the case of the palace at Phylakopi, the palace at Tiryns, and the palace at Arne.¹

That a process of adjustment of this kind really took place is made probable by the following circumstances:—The elongation of the front room is in accordance with the depth towards the back, beyond the hearth of the original central-hearth room of the primitive hut. The disappearance of the through door to the back room restores once more the time-honoured isolation which had always been characteristic of the room with the central hearth. The new outside passage is a substitute for the old b'en door.

Our main positions, then, in view of the new evidence, are the following:—

1. In the Aegean and Crete there is an initial—but no later—isolation of the living room. This is owing to the absence of the fixed central hearth.

2. The isolation of the living room, in conjunction with the presence of the fixed central hearth, is a primitive phenomenon on the mainland of Greece which tends to be kept up throughout the prehistoric age.

3. If the central hearth is installed in an unisolated room, this room is apt once more to become isolated.

The Nordic House and the Mycenaean Megaron.

Here now we come to deal with an interesting question. Noack would dispute the validity of the conclusion that the presence of the central hearth was in any causal relation to the isolation of the Mycenaean

¹ The back door of the East Megaron at Arne, as we have seen, preserves more than a mere reminiscence of an earlier state of matters in which the b'ut and b'en system played a more prominent part.

type of megaron. He regards the whole question as one of difference of origin. The Mycenaean megaron, according to him, has no affinity whatever with the other house-forms of the East Mediterranean, such as those of Crete. In doing so he calls attention to a type of hall with central hearth which has a very close resemblance to the central-hearth house of the Balkan Peninsula. This is the Nordic House. Noack then assumes that somewhere in North-Central Europe there must have existed some prototype which was responsible both for the Nordic house and the central-hearth house of the Balkan Peninsula. This then would be the primitive 'Indo-Germanic' prototype of the Mycenaean megaron.¹

In all this, Noack supports his theory on the fact that Meitzen has suggested a connection between the Nordic House and the old 'Greek' house with central hearth.² Meitzen, however, quite rightly regarded both the Nordic house and the central-hearth house of the Balkans as entirely of southern origin; his error consisted only in this, that he put the Nordic house in a relation of dependence to the later types of old 'Greek' house with a central hearth. Noack, now, in a way that hardly does justice either to the letter or to the spirit of Meitzen's views, reverses these entirely by the suggestion that both the central-hearth house of the Balkan Peninsula and the Nordic house stand in a relation of dependence to a Middle European prototype, which presumably at a less remove would be equally responsible for the East Germanic house.³

We have suggested in a previous passage what are the real affinities of the Nordic house. These, as we have seen, are to be sought in the West Mediterranean, and we have already indicated the way, and probable circumstances, in which this house type found a passage into Scandinavia.

The type started its existence in a definitely differentiated European form in the West Mediterranean area, and its dolmenic characteristics suggest that at a very remote period it had some sort of affinity with analogous house forms in the East Mediterranean. Once, however, the East Mediterranean type emerged with the characteristic mark of the

¹ *Hom. Paläste*, 35-6.

² Meitzen, *op. cit.* iii. 464 f., 475 f., 502 f.

³ With this supposed connection of the architectural phenomena Noack seeks to bring into touch the speculations of Hubert Schmidt and others to the effect: 'dass die neueste Forschung immer häufiger die Uebereinstimmung zwischen alttroischer und jüngerer neolithischer Keramik der Balkan- und Donauländer beobachtet, und im Sinne einer Kulturströmung in nord-südlicher Richtung zu deuten geneigt ist.' On all this see now especially *Class. Rev.* xxii. 233-8.

central hearth in the Balkan Peninsula, and the dolmenic hut of the West Mediterranean found its way with a central hearth through West Europe to Scandinavia, the paths of the two types diverged to such a degree that it would be perilous to assume that they ever came into any real contact again.

For this very reason, however, the central hearth arrangement in its relation to the isolation of the living room of the Nordic house is all the more significant.

We have already suggested that the migration of this house type into North-West Europe took place at a very early period, and probably indeed at a time when in the West Mediterranean the one-roomed hut, whether rectangular or round, was still practically in universal use. At a period so early the *b'ut* and *b'en* systems and the development of thoroughgoing interconnections had not yet had time to make their influence felt in those parts of the Mediterranean and its northern littoral where the central hearth was becoming a permanent institution. Now, what is likely to happen if a West Mediterranean dolmenic type of hut like that in question manages to reach a frigid climate like that of Scandinavia, at a stage in its development early enough for it to preserve its primitive characteristics under the altered climatic conditions? We are almost certain to find that the central fire comes to be fixed in the normal and central position it had in the most primitive circumstances. And all this is likely to happen without any such disturbance from the collusion of types, developed without relation to the central hearth arrangement, as is apt to come to the surface in the Mediterranean itself. This is accordingly the case with the Nordic house. A phenomenon like that of the central hearth in the front room of a *b'ut* and *b'en* system like that of Dimini and Sesklo is here quite unknown. There is nothing at all in the Nordic house to come near the frequent compromises of the isolation of the living room which occurs in the central-hearth houses of Corsica and Sardinia of the present day.

The isolation of the living room in the Nordic house is complete. The nearest analogy to this isolation in the Mediterranean is that of the Mycenaean *megaron*. Both represent a final stage in development, and both represent the type in its perfect form.

In the case of the Nordic house this result was apparently attained by simple conservation of the isolation of the original type throughout history. So much is this so, indeed, that when additions are made to the Nordic

house it is simply a case of reduplicating the living room on the free side of the entrance porch. This happens in such a way that the entrance door is now at the side with two identical rooms on either hand of an entrance passage.

The reason for all this is that in a severe climate like that of Scandinavia, the exigencies of isolation required by the central hearth are realized in an emphatic form. Here, accordingly, we find that everything is done to avoid innovations such as would come into conflict with these requirements.

In the case of certain types of Mycenaean megaron (Phylakopi, Arne, Tiryns) the influence is perceptible of an intrusive South Mediterranean b'ut and b'en type of house that had come into being without reference to the requirements of the central hearth. The intermediate stage, as we have seen, is represented by the b'ut and b'en megara of Dimini and Sesklo. In the regions accordingly influenced by the intrusive type the final ideal was not attained without what we have ventured to call an organic process of elimination. And there can be no doubt whatever that the intrusive through door came to be eliminated, because it was found to be inconsistent with the isolation of the living room required by the central hearth.

The simplest type of Nordic house is that represented in Fig. 17.¹ It is simply a one-roomed hut with porch. The hearth is in the centre, and the isolation is complete. The only opening besides the door is the roof hole for letting out the smoke and letting in the light.² The roof hole is provided with an adjustable shutter.

The first modification of this plan is that the back part of the porch is partitioned off and then entered from the central-hearth room.³ In course of time the oven against the wall ousts the central hearth, and under the influence of the change of conditions brought about by this transformation, window openings begin to appear in the walls.⁴ This, however, was a very slow process, and according to Lund the central hearth did not begin to vanish entirely until the 18th century.⁵

The usual way of enlarging a house of this kind was by simple reduplication. This was done in the way shown in Fig. 18.⁶ Here A is

¹ After Meitzen, *op. cit.* iii. Fig. XVI. a.

² Meitzen, *ibid.* 486, is emphatic on this point: 'the living room got its light only from above.'

³ Meitzen, *ibid.* Fig. XVII. a.

⁴ *Ibid.* Fig. XVIII.

⁵ *Ibid.* 487.

⁶ After Meitzen, *op. cit.* Fig. XX.

FIGS. 17-21.

FIGS. 17, 18, 19.—PLANS SHEWING DEVELOPMENT OF THE NORDIC HOUSE.

FIG. 20.—THE ELLIPTICAL HOUSE AT CHAMAIZI (P. 414, No. 1).

FIG. 21.—DIAGRAM SHEWING RECTANGULAR MODEL WHICH WAS THE BASIS OF THE ELLIPTICAL HOUSE.

the central-hearth room, B the porch, and C the new room. This new room is simply the central-hearth room over again, with the hearth left out. Instead of this central hearth it has an oven or stove (4) in a corner.

Now the remarkable and significant phenomenon in all this is that, with the appearance of the stove in this 'best room,' the time-honoured isolation is given up at once, and we have two windows in the wall alongside of the stove.

The simplest and most reasonable explanation of a phenomenon so striking is that which we have suggested all along, namely:—that it is the presence of the central hearth itself that, at bottom, is responsible for the isolation in the one case, and that it is its absence and the substitution of the stove that has brought about the possibility of wall-openings such as windows in the other.

In all this the work of collusion must not be left out of account, since the stove itself was an intrusion from another type of house in which windows were the order of the day. Once the stove came into a house of the Nordic type the windows were there to hand and intruded themselves as well.

But the evidence that it is the central hearth that is really responsible for the isolation of the living room is of a cumulative character. This becomes quite clear if we observe what happens when the hearth is ousted from its central position in the house altogether, and the fire is relegated to a subordinate position by the wall.

A very good illustration of this process is afforded by reference to the plan of a Nordic house shown in Fig. 19.¹ Here the room to the left (A) has lost its central hearth equally with the room to the right (D). Thus there is no longer any point or purpose in keeping up the old-fashioned isolation of the living room, and we accordingly have here two windows in the front wall of that, similar to the two in the other room.

What is most interesting in all this process of change is the way in which innovations are tried, first of all in the added room. This was the case with the other house referred to. By the time the central hearth comes to be ousted altogether from the house, a model is there ready to hand for the transformation of the old living room. This has now got a side oven (5), while the primitive culinary functions of the old living room are now relegated to a separate kitchen with side hearth (1) at the back of the lobby.

¹ After Meitzen, *op. cit.* Fig. XXI. a.

This lobby itself has a curious history. It is here so much interned in the structure of the house that it is only on reflection that one recognizes the primitive porch of Fig. 17. But even that no longer represents the most primitive arrangement. According to Meitzen, what was originally an open porch in the south is here, under severer climatic influences, a closed one with entrance at the side.¹

Now Noack lays special stress on the analogy pointed out by Meitzen and others between the Nordic house with front porch and the 'templum in antis' of the Hellenic world.² Unfortunately, however, for the use Noack makes of this analogy, it now turns out that the 'templum in antis' arrangement of portico with two columns occurs at Dimini and Sesklo in a context which Tsountas himself, as we have seen, would interpret much more in the sense of what is right in Meitzen's views than of what is wrong in Noack's.

Tsountas, that is, would suggest that the Neolithic folk of Dimini and Sesklo were a Mediterranean people of one kin with the prehistoric inhabitants of Crete. The severance between the two branches, he would say, must in that case have taken place long before the Fourth Millennium B.C.³ This again is a view which quite fits in with what has been said in previous passages, since it allows full scope for the divergencies that emerge in later development. We are thus prepared not to be surprised at the final form taken by these divergencies as represented respectively in the palaces of Crete on the one hand, and of Tiryns and Mycenae on the other.

The more immediate connections of the Scandinavian phenomena lie, however, in quite another direction, and the real congeners of the Nordic porch in early times are to be sought, not in the East Mediterranean, but in the West. The antae of those porches reflect a feature characteristic of many dolmens, and in this guise they have a very early and wide distribution in West Europe, ranging from the Mediterranean and the Iberian Peninsula through France and Britain to Scandinavia.

In Spain there are dolmenic tombs with antae that in type come very close to the *Hünenbeds* of North Germany and dolmens like those of Clare in Ireland.

The antae in certain localities show a tendency to splay away right

¹ *Ibid.* 475. ² *Hom. Paläste*, 35-6.

³ Tsountas, *op. cit.* 398.

and left in such a manner as to suggest that it was in this way the Sardinian Tombs of the Giants came to have their great frontal semicircle.

In Portugal, France, Ireland, and Sweden, certain dolmenic tombs show as marked a tendency for the antae to become elongated towards the front, and it is in this way that the genesis of the so-called *Allées couvertes* of France and Passage Dolmens of Ireland is to be understood.¹

In all this, however, we must not forget that the underlying rudimentary form is the simple rectangular dolmen with short antae.

In Britain, in regions as far apart as Ireland, Wales, and Scotland, dolmenic tombs with antae are of very frequent occurrence.²

We have referred already to the existence of dolmenic houses with base course of orthostatic slabs in Corsica. It is thus not a little suggestive to find represented in North Scotland, at Moorland in Caithness, a similar type of dolmenic house with orthostatic slabs.³ Here the antae recur, though they are not in line with the side walls of the house, but brought near together, so as to form a sort of narrow porch in front of the house. As along with all this we have the central hearth, we are bound to feel that we are very near the prototype of the Nordic house.

A porch of this kind is a feature of a very conservative type of two-roomed central-hearth house of the present day in Lappland.⁴

That this type of two-roomed house goes back to a very remote age is shown by the fact that the prototype seems to be copied in a type of double dolmenic tomb which has a very wide range in West Europe.⁵

Dolmenic tombs of the *Hünenbed* type, with sides prolonged as antae in front, such as we found already existing in the Iberian Peninsula, are frequent in Scandinavia itself, and these bring us as near as we can reasonably get to the prototype of the simple one-roomed Nordic house with front porch of the 'templum in antis' style.

Thus we find the general tendency of the West European evidence on the point to be such that there is no reason whatever to do violence to this evidence by reversing it in such a way as would make the 'templum in antis' porch of early Balkanic sites like Dimini and Sesklo, not to speak of Troy II., derivative from the North.

¹ Borlase, *The Dolmens of Ireland*, ii. 670, 693.

² *Ibid.* 372, 386.

³ Montelius, *Orient und Europa*, 161, Fig. 214.

⁴ Meitzen, *op. cit.* Atlas, Pl. 28 a, items 15, 16, 17.

⁵ *Ibid.* item 10; Montelius, *op. cit.* 99, Fig. 135, 100, Fig. 136.

It would be much more in accordance, indeed, with the East Mediterranean evidence and with the spirit of Meitzen's views, if the presence of the dolmenic type of tomb in Syria and in the Anatolian Levant as far as the Caucasus and the Crimea were not forgotten.¹ Especially would this be the case if the probable African origin of the dolmen were kept in mind, and it were seen to be likely that it was by way of the Isthmus of Suez that the dolmen penetrated northwards through Syria.² Ethnological pathways divide more easily than they unite again, and from this point of view we should not be surprised to know that another branch of dolmens can be traced as far as India.³ To reverse the evidence, whether in the West, with Great Britain on the one hand and Scandinavia on the other, or in the East, with two separate environments like the Caucasus and India, would be as much as to say that ethnological pathways meet more easily than they divide.

The antecedents of the dolmen tomb and its congeners, wherever these occur, point to a type of house with or without the portico 'in antis' of which it may well be true that the Neolithic huts, whether of Crete or of Thessaly, are only variants.

The portico 'in antis' of Dimini and Sesklo does not stand alone in the East Mediterranean, and the analogy of this with that of Troy II. has been already pointed out by Tsountas.⁴

In the Asiatic Levant itself, where we come into closer touch with one of the great tracks to northward taken by the dolmenic type of tomb, a form of house has survived in Lycia, of which the affinity with the megara of Troy II. is no less patent on the face of it, than the analogy with the megara of mainland Greece and with the Nordic house itself.

The resemblance of the later Lycian house to the rock-cut tombs of Lycia in classical times suggests in turn underlying connections going back to those prehistoric times when the dolmenic type of tomb was making its way northwards across the Anatolian Levant as far as the Caucasus and the Crimea. We are bound then to ask whether there is not a nexus of an intimate kind underlying these phenomena.

¹ Borlase, *op. cit.* iii. 726-50.

² It is hardly possible to agree with Pinza when he would call the Syrian dolmens the work of Hebrews. See *Atti Congresso storico, Roma*, vol. v. 471.

³ Borlase, *op. cit.* 750-5.

⁴ *Op. cit.* 368, 404.

A very luminous suggestion tending to show a real connection in prehistoric times of the phenomena referred to, has been made by Dr. Arthur Evans while discussing the house-sign on the Hieroglyphic Disk of Phaestos.¹ In this sign Dr. Evans suggests a close resemblance with the tombs and rock carvings of Lycia, and adds that 'it is natural that the sepulchral art of classical Lykia should have preserved the domestic architecture of a more remote period.'²

To judge by the house-sign on the Disk, the portico 'in antis' in one form or another must be taken to have been characteristic of this earlier domestic architecture of Lycia no less than of Troy II. and of the megara of Dimini and Sesklo. And if Dr. Evans is right in his suggestion of an Anatolian origin for the Disk of Phaestos, we have a gable entrance, made probable for this kind of house in Lycia, as early as the first half of the Second Millennium, B.C.

Here now comes out an interesting architectural feature. The Anatolian building represented on the Phaestos Disk, though a gable house, has the same eccentric position of the doorway towards one side of the façade as we have already noticed in regions as far apart as Egypt, Crete and the early settlements of Neolithic Thessaly.³

The division of the front into two parts again suggests an underlying affinity with the portico arrangement characteristic of the Cretan palaces. And this resemblance in turn makes it seem likely that the particular feature of Minoan architecture referred to stood, as an isolated survival, in a derivative relation to some earlier type of simple house front, of which the Anatolian façade represented on the Disk might then very well be a closely allied variant form.

The Round Hut in its relation to Rectangular Construction in the Aegean.

In all that has been said above about early settlements in the Aegean and on the mainland of Greece in the prehistoric age, it may seem remarkable that so little should have emerged about the rôle played by the round hut in the development of East Mediterranean architecture.

¹ Now published by Dr. Luigi Pernier in *Ausonia*, iii. 1908, 255-302. For the house-sign referred to see 288, item 26, and Tav. XII., XIII.

² *Scripta Minoa*, 26; also notes 2 and 3.

³ The stamped sign has the door at the left end of the *façade*. On the stamp itself the door was at the right end.

This, however, has not been without its own good reasons in special local circumstances. For example:—we should not have been able to discuss house forms in Early Minoan Crete without any reference whatever to the round hut, if the round hut were at all common at those sites from which we derive our knowledge. As a matter of fact, however, it is entirely absent. Not one example of its presence occurs at sites like Vasilikí or Psira or Mochlos, and any Early Minoan houses that have been traced at Knossos are of rectangular construction. Under these special local circumstances accordingly we have only to do such justice to all the available evidence as takes into account the fact that, alongside of rectangular Early Minoan ossuaries like those at Kastrí, we have circular tholoi like those at Koumása and Hagia Triada.

Then there is Sardinia. In this case, any discussion of architectural development in the prehistoric age would be entirely a question of round huts and their transformations. And we should only be unjust to the evidence did we fail to take account of the fact that the burial monuments of Sardinia are largely, if not exclusively, of rectangular type.

In Crete we have a reversal of this relation, but not a quite complete one. Rectangular houses, as we have seen, are universal there in the Early Minoan age. Alongside of these there are circular tholoi, but there are also rectangular ossuaries as at Kastrí.

At Dimini and Sesklo the houses are entirely of rectangular type. On the other hand, the earliest settlement at Orchomenos is one entirely of round huts. But in neither case do we know what the corresponding burials were like. Were those of Orchomenos of round type like the houses? Here there are many pitfalls, and it would be useful to know more about the round hut and early tholoi elsewhere on the mainland of Greece, and their distribution further north, before venturing on the sweeping generalization that it was from that direction the round hut and the beehive tomb penetrated into the Hellenic world.¹ In the absence of such knowledge, examples like those of Crete and of Sardinia might serve as a salutary warning not to jump too hastily to conclusions of this kind.

The tendency of the evidence is rather this:—in the Mediterranean we hardly ever find the one type or the other in exclusive use over a wide area. And we are never at all able to get so far back as to entirely separate

¹ Bulle, *Orchomenos*, I.: *Die älteren Ansiedlungsschichten* (Abh. K. Bayer. Ak. Wiss. I. Kl. xxiv. Bd. II. Abt.), 43.

rectangular construction from the round building ethnologically, that is, we are never able to say definitely that the one is from the south and Asiatic or African, and the other from the north and European. The process of exclusion and of separation is of another kind: it is organic and a matter of development. Thus, for example, in any one locality where both types of construction are represented simultaneously it usually turns out that the one type tends to come more and more into vogue for dwellings and the other for tomb-use or *vice versa*.

The general tendency of this process is of a very essential character. It is this:—given the simultaneous occurrence of round huts and rectangular houses over wide areas like the East or West Mediterranean taken as a whole, there is no doubt that in the long run the general tendency is for the rectangular house to oust the round one.

A phenomenon intimately connected with this one is that when once the round building has gone out of use over a wide area like the Mediterranean it never again regains any ascendancy either generally or locally.

Rectangular construction, however, never manages to get the upper hand to the entire exclusion or extinction of the round type of building. This always manages locally to lead a latent existence in one form or another, and it shows a remarkable tendency to come to the front once more when special circumstances tend to favour its doing so. But it always survives in its primitive form, and complexes like those represented in the pyxis of Melos or the Nuraghi of Sardinia do not often repeat themselves in architectural history.

The round type of building is by its nature structurally exclusive of the rectangular one. It never manages to absorb it in any shape or form.

Rectangular building on the other hand, while not easily combinable with circular construction, is not entirely exclusive of it. The early development of the apse is a phenomenon in point. Again, the round bastion at the corners of a rectangular building has had a long and continuous history. In this respect much of later fortification, especially in West Europe, whether in the form of the castle or of the citadel, is to be traced back to beginnings in the Mediterranean in prehistoric times.

We see then that it is the rectangular type of construction that really performs the process of assimilation; the other does not assimilate at all. Thus it is that the round building has never been found to exercise any formative influence on rectangular construction, even in those circumstances

in which the two types of building went on side by side. And when once in any locality the round building loses its hold as a form of domestic architecture, it is hardly ever likely in that same locality to come to the front again in the same capacity. It manages to survive in virtue of its being relegated to other uses, such as, for example, the housing of the dead or the cult of some divinity. It henceforth remains in its self-isolation and there cannot now be any question at all of its exercising any further formative influence whatever on rectangular construction.

This uncompromising self-isolation on the one hand, and the almost equally strong tendency to avoid assimilation by the rectangular system on the other, come out very clearly in the later history of the building. Its final apotheosis in the antique world is to be seen in the Pantheon at Rome.

In all this, one underlying fact is quite clear :—the problem from the beginning was one as to what rôle the round building was to have in rectangular construction, and not *vice versa*. This problem was never solved in ancient times at all, and its ultimate solution was reserved for a much later time, with the apotheosis of the primitive round hut in the cupola of St. Peter's at Rome.

What then shall we say now of the other question of a formative influence of the round building on rectangular construction? And what shall we say of this in relation to Early Minoan Crete? There the circular habitation, so far as we at present know, is entirely lacking at the period in question, and the only form in which it has been as yet found to live on is that of the circular tholos tomb. If then it is clear, from what has been said already, that even the existence of the round house on a large scale in Early Minoan times would have been hardly calculated to exercise a formative influence on the rectangular construction of a later time, what shall we say of such an influence when it is limited to the sepulchral architecture of the time? It thus turns out that at most it would only be a case of inquiring what the possible influence could have been from a still earlier period on Early Minoan architecture itself. And this question in turn would only have actuality provided one knew for certain that the round hut existed in the Crete of Neolithic times.

When, however, we turn to Early Minoan sites themselves we find that these, so far as we at present know, are so entirely rectangular in their constructions that they can be exhaustively studied as a matter of early archi-

tectural development without the question ever once arising whether at an earlier age round or elliptical buildings may not have existed alongside of similar rectangular constructions of a simpler kind. This, be it remarked, is not at all meant to deny such existence, since our real view is that Neolithic round huts could quite well have so existed without exercising any formative influence whatever on Minoan architecture.

It is true indeed that the circular building as a habitation might conceivably be found as a result of excavation on Early Minoan sites themselves not yet explored. But the case is different here, since we have already positive evidence, and it must be steadily borne in mind that the round hut has not so turned up on any Early Minoan site hitherto excavated. It does not occur at Vasilikí, nor has its presence been verified at Psira, or Mochlos, or indeed at any other known Early Minoan site in Crete.

We must then for the present stick to the evidence we have. Thus if the round hut did really exist at an earlier age, as the circular tholoi would lead us to conjecture, the one lesson taught by the evidence from the Early Minoan sites is the completeness with which they have disappeared. Of any possible formative influence they could have had there is, as we might have expected, not a trace.

The general impression left by these Early Minoan sites is the advanced character of their house architecture. A massive building like that brought to light by the British School at Palaikastro, is a revelation in this respect.¹ The broad type of room is here already apparently elaborated into a system. Then there is the facility with which certain fundamental house-units come to be incorporated into a consistent plan with thoroughgoing interconnections. This is especially noticeable at Vasilikí. The main system here is of such large size and of so elaborate a character that the discoverer, Mr. R. B. Seager, is very likely right in regarding it as one building. In other words, it is probably an Early Minoan palace.² In that case we shall eagerly await the complete excavation of it. It already presents some of the fundamental features of the later Minoan palaces. If then on further excavation it should prove to have other palatial characteristics, such as the internal court and uncovered spaces for lighting, that again would only be what was to be expected. This building, I understand, belongs to the Second Early Minoan period (E. M. II.). The earlier palace at Phaestos and the earlier

¹ See *B.S.A.* xi. Pl. X.

² *Gourniá*, Pl. XII. and Text 49.

elements of the palace at Knossos go back to the First Middle Minoan period (M. M. I.). Thus it does not seem too great a stretch of the imagination to conjecture that features such as the central court may have been already in vogue in the still earlier period to which belongs the important edifice at Vasilikí to which reference has been made.

In connection with the prototype of the Neolithic house at Magasá we have had again and again to refer to the early preference for doorways at or near the end of the wall to which they belong, in the case of one-roomed houses with a broad front. We found the tendency illustrated not only in Neolithic Crete but in the earliest settlement at Sesklo. In the case of both Crete and Sesklo it turned out that the more distinct bias was for the right end of the wall.

This preference has a long later history. As single rooms are united in a system, the tendency is still there in the case of the single rooms. This tendency is frequent in particular instances in Early Minoan times, to judge by Vasilikí and the ossuaries at Kastri. If room is added to room in a system, so as to give several in a series to one front, the door sometimes gets displaced, but if the plan of the house has been conceived as a whole and the house built at one time, the door is apt to be placed once more towards one or other end of the façade. Early Minoan examples are as yet lacking, and this makes one all the more regret that the main door of the house at Palaikastro referred to already, and of the 'palace' at Vasilikí, has not been made out.

The later influence of the tendency is, however, quite clear. The entrance to the earlier palace at Phaestos is towards the south end of the west façade; that is to say, looking in a central position towards the front, one has it to the right. It is similar with the South-West Portico at Knossos. At Gourniá the palace has its entrance near the south-east angle of the building, again to the right as one faces the front.

With this bias comes into competition in the Middle Minoan period a counter tendency in favour of doorways in the middle of the front. This is neatly illustrated for Crete by the faience plaques from the Palace at Knossos showing the façades of Middle Minoan houses. The tendency is general. We see it again in the Second City at Phylakopi, and on the mainland, as already remarked, at Dimini and Sesklo in Thessaly. The tendency is intimately connected with the development of the b'ut and b'en system and the narrow front. Yet here once again an influence

that comes down from Neolithic times, in the shape of the entrance corridor or porch with side door, alters the orientation in such a way that the elongated side of the house becomes once more a broad front with the door at or towards one end of this. This influence is illustrated in Early Minoan Crete at Vasilikí, it is very strong in the Second City at Phylakopi, and there is more than a remote echo of it on the mainland at Arne. The advantage of having the side of the house towards the street has all along had a strong influence in keeping up the broad front with end door.

Thus the time-honoured old arrangement is never really given up. Under the influence of later palace architecture the tradition about having the door towards the right of the front gradually loses its force. Thus, for example, the entrance to the *Petit Palais* at Knossos is still towards the end of the façade, but it is to the left towards the S. E. angle of the house.

Provincial architecture is much more conservative of tradition. We have a good example in the L. M. II. house at Palaikastro published in *B.S.A.* xi. 282, Fig. 13.¹ This is a typical house with broad front to the street and entrance with portico here once more at the right end of the façade.²

In all this we cannot expect a tendency so marked as to admit of no exceptions. These are always sure to occur under the stress of particular circumstances especially in town sites.

From the point of view of affinities it is perhaps more instructive to call attention to the fact that the usual Egyptian hieroglyph for 'house' shows a front with door at its right end.³ This is not without a very close relation to reality. In Crete a hut like the prototype of the Neolithic house at Magasá would have to be indicated in a similar way, and the Neolithic hut at Sesklo shown in Fig. 11, with its door at the right end of the front, is exactly such a house as that represented in the Egyptian hieroglyph. Further excavation of Egyptian houses will throw much light on this matter, and it is already startling to find that houses like those of Tell el-Amarna have their entrances so often at the end of their façades.⁴

The elongated rectangular shape of the house at Palaikastro with door at the end of the façade is characteristic, and, as we saw, goes back to

¹ For description see *ibid.* 284-5.

² The house shown *ibid.* Fig. 9 has its door in a similar position to the right.

³ Maspero, *Histoire Ancienne*, i. 260.

⁴ See Tell el-Amarna, Pl. XXXVIII. 2, 4, 5, 6; XXXIX. 7; XL. 13.

very primitive times. The influence of this comes out in palace architecture in that wing which has the portico towards the end of the façade, and in this respect the elongation and the position of the entrance have to be considered in relation to this wing, not to the palace as a whole. In other words, an entrance like the South-West Portico at Knossos and the wing to which it belongs have to be taken together and regarded as going back to a house-type like the prototype of the Palaikastro house.

The Cretan type of palace, taken as a whole, would then have to be considered as a reduplication of such a type in such a way as to have the old outside court in the centre of the whole. It might then be the influence of this central court arrangement itself that would in turn account for the genesis of the palatial façade with central entrances.

In this connection it must be remembered that the primitive arrangement is for a house to have a free space in front of it, paved or unpaved, and enclosed or unenclosed. An enclosed area is a front yard and an unenclosed one is an external court.

An enclosed court in front of the house, like those common all over the Mediterranean, becomes transformed into an internal one in the following way:—In the first place, out-houses are built on the other side of the court or on all free sides of it, as is apt to happen in the case of a farm-yard. In the second place, the out-houses are transformed into rooms which very often begin by being spare or guest rooms and then by means of thoroughgoing interconnections become an integral part of the house. The difference between public and private wings in the case of the Cretan palaces may go back to a simple origin of this kind.

In all this, one matter has to be kept steadily in view: the elongated shape of the internal court on the new arrangement is intimately connected with the elongated character of the house in its original form, and this in turn has its influence on the shape of the transformed house. This tends to have the same form of an elongated rectangle as the original type.

The Elliptical House at Chamaizi and the Cretan Palaces.

Let us now, armed with these essential data, come to the elliptical farm-house at Chamaizi (Fig. 20).¹ This house has several of the characteristic features of the type we have described.

¹ Reproduced by kind permission of Dr. Xanthoudides.

In the entrance towards the right of the front we recognize a very old friend indeed. For a moment we are deceived by the strange disguise and form. Then there is the characteristic elongated shape of the house as a whole, and here again the elliptical contour only deceives us for an instant. We realize that the house is simply an elongated rectangular house of well-known Minoan type, compressed within the limits of an ellipse. The whole is a freak.

Noack, however, puts forward an entirely opposite theory, and with much misguided subtlety would seek to show that what we really have before us is an illustration of the process by which an elongated elliptical house was transformed into an elongated rectangular one, which then in its internal arrangements became the prototype of all Cretan palaces.¹

In all this Noack makes much of the eccentric position of the doorway. But instead of recognizing in this a very old feature of rectangular houses which, as we have seen, occurs again and again in Crete, he wastes much ingenuity in the attempt to show that the eccentric position of the doorway is chosen on purpose to suit special circumstances.² This will never do. Indeed, if there is anything that cannot be invented out of the circle or even the ellipse, it is an eccentric position of the doorway. Noack himself seems to be conscious of this difficulty, and hence the curious effort to relieve his conscience with an explanation *ad hoc*. The builder is, of course, all the time following a traditional right-angled model, and as regards the position of the doorway in its relation to the rooms adjacent to it at the end, he is simply landing himself in all sorts of difficulties in his endeavour to compress a rectangular house into an elliptical casing.

Once given the elliptical form which the builder wanted to give to his rectangular model, the convergence of some of the walls at the ends is inevitable, if he is not to find himself in new dilemmas. To convince ourselves of this, we have only to imagine what would happen if the wall between rooms 5 and 6 were carried along parallel to that between rooms 4 and 5. This latter wall itself, however, is drawn straight along in rectangular fashion, instead of radiating, as it ought to do according to the elliptical model given by Noack in his Fig. 6. By so doing, it very clearly betrays the fact that the builder in his construction is really under the influence of the traditional rectangular model he has in his mind. Neither it nor the short wall at the back of room 4 should go at right angles as if

¹ *Ovalhaus und Palast*, 51-70.

² *Ibid.* 59.

they belonged to a rectangular house, but ought to radiate, if they had the relation to the roof-beams of an elliptical house which Noack would give them. It is the same with the wall between rooms 13 and 15 at the other end of the ellipse, and with the wall of room 10 in line with it. These equally betray the rectangular model. Room 10 has its walls twisted up in such a way as to have no connection with the rest of the system. It was possibly the pig-stye! The walls between rooms 11, 14, and 13, and that between rooms 15 and 10 and between 10 and 10 *a* radiate, it is true, but they do not converge on any common point. Wall 14 *a* again which ought to represent Noack's long roof-beam is not in the long axis of the ellipse but somewhat in front of that. It is the same with the central court. This is both more to the front and more to the left end of the house than it ought to be. Noack adds the corridor area numbered 16 to this, but without apparent warrant, and if that space is subtracted from the whole area of the central court the eccentric position of that is at once apparent. A discrepancy of this kind matters very little from the point of view of the rectangular house, but added to so many others it is hardly calculated to inspire confidence in the rightness of Noack's views to the effect that there is an essential relation of parts in the plan of this house to the ellipse as such.

If on the other hand we start from the position that this plan was developed in course of time independently of the use to which it is put in the present case, we shall take whatever is rectangular as representing what is normal in the whole. But this includes not only all the central part of the plan, but also all the construction at the ends which betrays the influence of rectangular models.

If now further we copy out all these rectangular elements on paper, we find that they by themselves form the foundation for the plan of a rectangular house of characteristic Minoan type. We have finally only to straighten out the few oblique walls at either end, to complete this plan as shown in the diagram of Fig. 21.

Comparing the two plans, we now realize that all that is not consistent with the rectangular plan in the elliptical one is owing to the occasional difficulties in which the builder is involved in attempting to carry out his rectangular constructions at the ends, when he comes into conflict with the rapid curve of the ellipse at those parts.

What the builder has done is what every early mason would be likely

to do in similar circumstances with a rather novel job on his hands. He draws out his walls as well as his eye shows him at right angles to his curve just as if that formed a straight line. All this is a fairly easy matter at either side of the ellipse where the curves are shallow, and here the rectangular plan is fairly easily carried out. But at the ends, where the curve is rapid, difficulties crowd upon him, and he is evidently so unpractised in this sort of curved construction that he does not always succeed. The oblique walls are neither consistently at right angles to the curve, nor do they converge towards any common focus at either end. Then, as we have seen, he occasionally forgets himself and draws out his walls in rectangular fashion in cases where they ought to have been oblique, were they carried out at right angles to the curve. The result is that everything betrays the prentice hand where the critical parts of the elliptical construction are concerned, and everything reveals the rule of thumb of rectangular construction wherever that can anyhow be got in. Of almost the whole back part of the house this latter observation is particularly true. And, indeed, hardly more than a stroke of the pencil is needed in the case of the few oblique walls that exist in order to bring out the complete plan of a rectangular house like that shown in our diagram.

That our mason was entirely ignorant of curved construction, it would be difficult to affirm without risk of error, in view of the existence of tholoi in Minoan Crete; but what he was entirely ignorant of was the rational internal construction of an elliptical house such as Noack has in view with his type diagram. Given, however, an elongated rectangular house of the period and the desire, for whatever reason, to adapt this to a curved shape, the elliptical form of this curve emerges without further ado as a direct consequence of the elongated shape of the rectangular type of house, which, as we have sought to show, the mason had in his mind.

The presence of the elongated rectangular central court at Chamaizi is a very essential feature, and as yet we have no evidence from the Early Minoan period which might throw a positive light on the earlier stages of the development of this. Here it is essential to remember that the elliptical house at Chamaizi itself belongs to the First Middle Minoan period; that is to say, it belongs to the same period which saw the foundation of the Cretan palaces. An essential part of the deposits of this house is represented by the terracotta figurines shown in 'Eφ. 'Aρχ. 1906, 135-42. These come into the same category as the figurines of Petsofà which are of

M.M.I. date.¹ To judge indeed by the polychrome character of the geometric motives that occur at Petsofà those figurines belong to an advanced rather than to an early stage in the First Middle Minoan period. Thus it turns out that the elliptical house at Chamaizi belongs to a period when all the essential features of Cretan palace architecture, including the central court, were already an accomplished fact.

As then it is clear that the Cretan palace plan was already in existence at the period to which belongs the house of Chamaizi, we have enough evidence to show that the rectangular type of house with elongated central court was already there to hand as the model which the builder of that house had in mind when he conceived the singular freak of adapting this rectangular type to his elliptical outline. Thus there are no cogent grounds whatever for accepting as a reasonable theory Noack's account of the genesis of the elongated form of the rectangular central court out of the ellipse. One only requires to do some little justice to chronology to see that the view we have set forth already is the right one, and that it was the elongated shape of the rectangular type of house of the period that conditioned the elongated form of the ellipse at Chamaizi and not *vice versa*. Indeed we may go a step further and conjecture that the rectangular house-type responsible for the internal plan of the ellipse of Chamaizi already stands under that reflex influence of the palace architecture of the period which is so continuously operative from Middle Minoan times onwards. In that case we are not far away from a conclusion which would be the exact opposite of Noack's. That is to say: the primordial ellipse supposed to underlie the plan of the farmhouse at Chamaizi never existed, and could not have been responsible for the main features of the Minoan palatial style; it is the palace architecture of the First Middle Minoan Period in its reflex influence upon the domestic building of the time that accounts for all that appears 'palatial' in the internal architectonic arrangement of the house at Chamaizi.

In relation to the development of the elongated central court, Noack would assign an important function to the roof construction of his elliptical house as illustrated by his diagram, Fig. 6.

It is, according to him, the distribution of longitudinal and transverse roof beams and their relation to partition walls corresponding to them below that condition the whole internal arrangement of the house. Especially the

¹ *B.S.A.* ix. Pls. VIII.-XI.

elongated rectangular form of the central court is made to depend on the greater length of the side beams $\alpha-\beta$ and $\gamma-\delta$ as compared with the shorter tranverse intervals between α and γ , and β and δ .

We at once begin to doubt the feasibility of this explanation when we realize that this singular organic process involves the removal of the entire central part of the roof, including the whole of the long roof-tree itself.

Before going further, one would like to ask Noack as to his evidence for the existence of a keel roof of this kind in Middle Minoan Crete. Far from there being any real evidence of this kind, there is every reason for believing that at that period flat roofs, with a slight incline to carry off rain water, were the order of the day. The faience house-façades of Knossos are a telling illustration as to what the roofs of Cretan houses were like in Middle Minoan times. They are invariably flat !

Here we come to a very crucial point. The central court of the house at Chamaizi has a cistern for rain water in the near right hand corner as one enters. In relation now to the collection of rain water in such cisterns the construction of the roof plays an important rôle in southern countries ; and long experience had apparently shown the adaptability of flat roofs to this special function. The slight incline, however, had to be there in order to compel the water to flow in a certain desired direction. In the case of the house at Chamaizi, we can be certain that the roofs in the immediate environment of the cistern had a declination and a convergence of the slopes such as would effect the flow of the water into that.

What is the case with a roof like that presupposed by Noack ? Instead of having a declination towards the central court, and notably towards the cistern, this slopes rapidly down outwards all round in such a way as to carry off and disperse the rain water outside, and does not collect in the cistern inside the house.

Noack may conceivably be prepared to give up his keel roof with its rapid slope down and outwards, and to admit that such special circumstances as the necessity for collecting rain water supplies may have led to a slope, which though not so great was the very opposite of that assumed by himself. In that case, however, he comes very near indeed to giving away his cause entirely. And it is a very poor cause at best which would seek support in the suggestion that the round and elliptical hut as represented in the East Mediterranean was itself of Northern origin, and that the transition to flat roofs was a transformation which took place later in the

Mediterranean. Unfortunately for such a suggestion, were one disposed to make it, the declination which the flat roof always retains is, as we have indeed seen, the wrong one at Chamaizi from the point of view of the keeled roof imagined by Noack. But it is entirely the right one from the point of view of the architecture of rectangular flat-roofed houses with central court in the Aegean, for which a rain water supply conveniently at hand in the interior of the house is seen, from the house at Chamaizi, to have been a paramount consideration.

We shall not go the length of suggesting that Noack assumes for the Cretan Palaces any real survival of a keel roof, such as he imagines for the elliptical house at Chamaizi. If, however, he were to make any such assumption, he would, as it happens, be once more entirely in the wrong. A group of manholes connecting the roofs with the drainage system is preserved for us in the East Wing of the Palace at Knossos, and these are all adjacent to the Central Court. This can only mean that there was a declination of the flat palace roofs towards the point at which the manholes occur in order to make the flow of water converge on that. Here then again we have a slope of the palace roofs at Knossos completely analogous to that which the internal position of the cistern makes necessary for the house at Chamaizi, and it contradicts the carinated roof prototype of Noack's theory in entirely the same way.

Let us now finally for argument's sake grant the keel roof of Noack's prototype. Even so, why put this into any special relation to an elliptical type of construction, since Lycia, as we have seen, probably had a house-type with carinated roof which was itself, be it noted, entirely rectangular in form! Notwithstanding then the misleading ellipse of Chamaizi, we see keel roofs in the East Mediterranean area which, instead of being associated with elliptical houses, are seen in the case of Lycia developing in connection with a rectangular type of house. Shall we then go the length of suggesting that the rectangular house took over the keel roof from an elliptical type of building? Yet even then this rectangular type of house with carinated roof, notwithstanding all its southern affinities and claims of relationship to Aegean house forms with which those of Noack's primordial ellipse cannot be compared, could hardly be assigned a rôle in relation to the development of the Cretan Palaces, such as Noack claims for the supposed prototype of the elliptical house at Chamaizi. From the point of view of roof construction, the development of the Cretan Palaces

was of an entirely different kind. And of this we found an indication in arrangements for roof drainage, which are seen to be no more characteristic in the East Wing of the Palace at Knossos than at Chamaizi itself.

The theory of the development of the central-court house of the Aegean criticised appears at first sight so plausible that one would naturally be disposed to discuss it on its own merits, were there any real data to go upon, such as might reasonably be supposed to point in the direction suggested by Noack.

Such indications as there are, however, rather point, as we have seen, in another direction. And here we are more than justified in appealing to a piece of evidence left out of account by Noack, but which for our present purpose is very much to the point. It is that supplied by the pyxis of Melos shown in Fig. 1 [see p. 359].

What the pyxis shows us is a house with circular rooms ranged right and left and at the back of a central court which is itself, be it noted, of elongated rectangular type. The house is entered, be it further noted, by a gabled portico in the long axis of the central court. Now it does not require much observation to see that the genesis of this kind of central court is quite different from that conceived by Noack for the elliptical house at Chamaizi. And the difference becomes all the more striking for the very reason that, though the unit in construction with which we start is a circle, the central court which emerges has the same quadrangular form it would have had were we dealing entirely with rectangular construction. Indeed, so much is this the case, that the suspicion arises that the model for the rectangular court of the Melian pyxis was an entirely rectangular house with central court. The straight front of the portico points in the same direction, and though this has a gabled roof, the latter cannot be explained by reference to the keel roof of Noack's ellipse. A portico of this kind is indeed more likely to have a certain affinity with that which formed a characteristic feature of the *megara* of Dimini and Sesklo which are of entirely rectangular construction. The portico, equally with the central court of the Melian pyxis, betrays the influence of rectangular construction.

The one architectural analogy in the Mediterranean, which shows most strikingly how circular constructions generate an internal court independently of the traditions of rectangular construction, is provided by the

Nuraghi of Sardinia.¹ And it can be taken as quite symptomatic that in this case a rectangular outline is a very rare exception and never the rule. Yet all the same the Nuraghi of Sardinia, equally with the house-model for the pyxis of Melos, start with an addition of unit to unit, and there is nothing whatever in either case corresponding to that process of internal differentiation within a single unit presupposed in the elliptical prototype of Noack's theory.

That the portico of the Melian pyxis, taken by itself, may have a certain affinity with that which is characteristic of the megara of Dimini and Sesklo, need not surprise us too much, since the pyxis probably belongs to the beginning of that Middle Cycladic period when intercourse between the Aegean and Thessaly was probably more active than at any other time. But in case we should be tempted to draw wrong conclusions from the fact of this affinity, it will be well to bear in mind the equally striking fact that certain typical house fronts of the Second City of Phylakopi betray an equally strong analogy with characteristic façades of Middle Minoan Crete, as represented by the Saience plaques of Knossos.

As regards the type of circular-roomed house in the Aegean represented by the pyxis of Melos, the near analogy of the Nuraghi of Sardinia does not encourage us to wander so far afield as East Central Europe for the prototype of this kind of house in the Mediterranean. This is what Bulle does with the round huts of Orchomenos; but with that and connected questions I hope to deal later.

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¹ The Nuraghi of Lōsa, Lugheras, Voes are typical examples.

(To be continued.)